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Michigan Timber Industry-An Assessment of Timber Product Output and Use, 1994

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FOREWORD

In this bulletin we discuss recent Michigan forest industry trends and report the results of a detailed study of forest industry, industrial roundwood production, and associated primary mill wood and bark residue in Michigan in 1994. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Likewise, researchers need current forest industry and industrial roundwood information for planning projects.

Special thanks are given to the primary wood-using firms that supplied information for this study and to the Michigan Department of Natural Resources for canvassing the respondents. Their cooperation is greatly appreciated.

All board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.08 to all saw log volume reported in Scribner Decimal C scale by sawmills, a multiplier of 1.04 to all veneer log volume reported in Scribner Decimal C scale by veneer mills, a multiplier of 1.38 to all saw log volume reported in Doyle scale by sawmills, and a multiplier of 1.14 to all veneer log volume reported in Doyle scale by veneer mills.

The last published report from a detailed study of all industrial roundwood output in Michigan was in 1992. Most comparisons in this report are with the 1992 study results. Row and column data of tables may not sum due to rounding, but data in each table cell are accurately displayed.

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Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1994

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HIGHLIGHTS

PRIMARY TIMBER INDUSTRY—INDUSTRIAL ROUNDWOOD

- In 1994, Michigan's primary wood-using industry was comprised of 284 mills, not including 32 sawmills that each processed less than 50 thousand board feet in 1994 (table 1).
- Most of the State's primary wood-using mills are located in the three most northern Forest Survey Units (figs. 1, 2).
- Between 1992 and 1994, Michigan's primary wood-using industry declined by 33 mills; most of these were small sawmills (table 1).
- In 1994, Michigan's primary wood-using industry processed 334.6 million cubic feet of roundwood—nearly a 2-percent increase since 1992 (table 2).
- Michigan's 11 pulp mills processed nearly 207.6 million cubic feet of roundwood in 1994, a 3-percent increase from 1992. These mills processed more than twice as much as the many sawmills did, accounting for 62 percent of all roundwood processed.
- Hardwoods made up 4 out of every 5 cubic feet of roundwood processed by the State's primary wood-using industry in 1994.
- In 1994, 386.9 million cubic feet of industrial roundwood was harvested from Michigan's forests, a 12-percent increase from 1992 (table 3). Softwood production increased by almost 1 percent and hardwood production increased by 15 percent from 1992 to 1994.
- The increase in hardwood production was associated with the increased use of aspen and maple for pulpwood and industrial fuelwood.
- In 1994, pulpwood remained the predominant roundwood product harvested from Michigan's forests (fig. 3).
- The State's industrial roundwood production was mainly in the Upper Peninsula and the Northern Lower Peninsula, which provided 93 percent in 1994 (fig. 4).
- Nearly all the industrial fuelwood and more than two-thirds of the saw-log production came from the Lower Peninsula. The Upper Peninsula provided nearly two-thirds of the pulpwood and more than three-quarters of the veneer logs harvested in the State.

PULPWOOD

- Michigan's pulpwood production (including both roundwood and mill residues generated by the State's other primary wood-using industries) has been steadily increasing over time. Pulpwood production has been hovering around the 3 million cord level for the past 7 years (table 4, fig 5).
- In 1994, pulpwood production in Michigan totaled 3.3 million cords, a 5-percent in-

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Figure 1.—*Forest Survey Units in Michigan.*

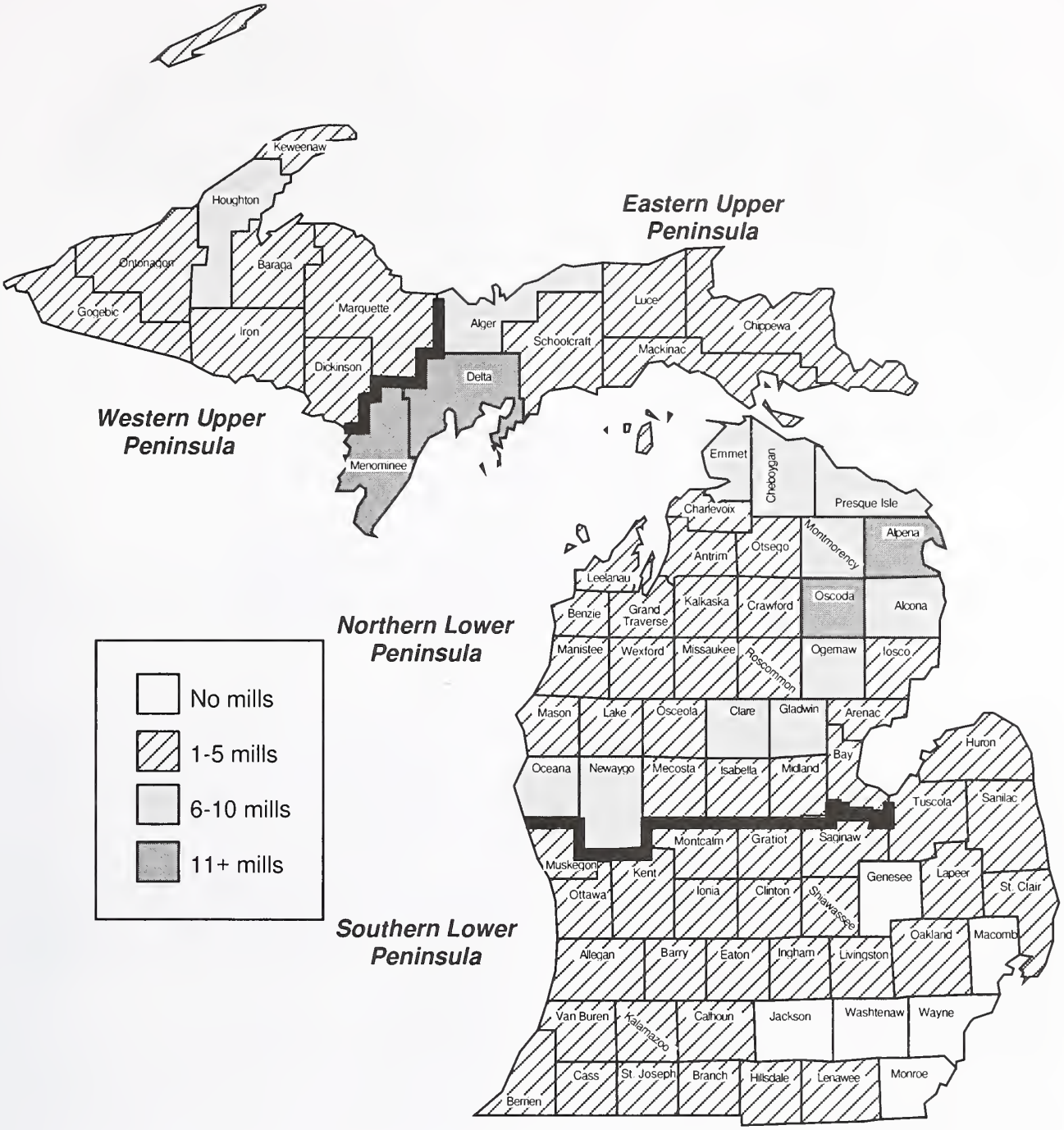

Figure 2.—*Number of primary wood-using mills by county, Michigan, 1994.*

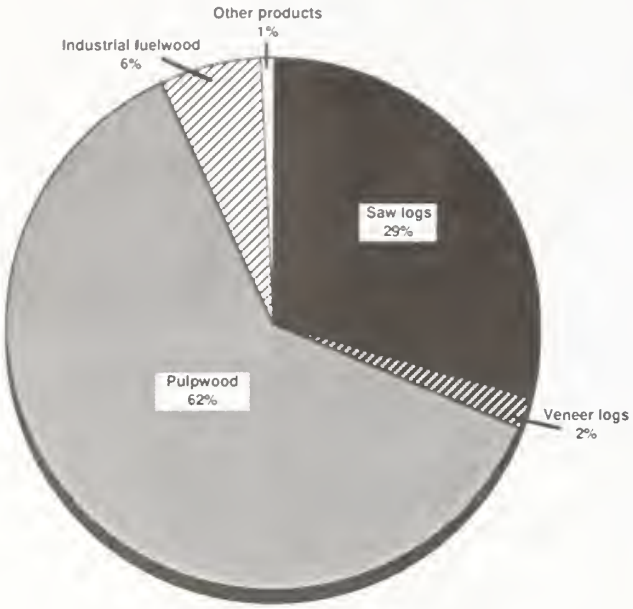

Figure 3.—*Distribution of industrial roundwood production by product, Michigan, 1994.*

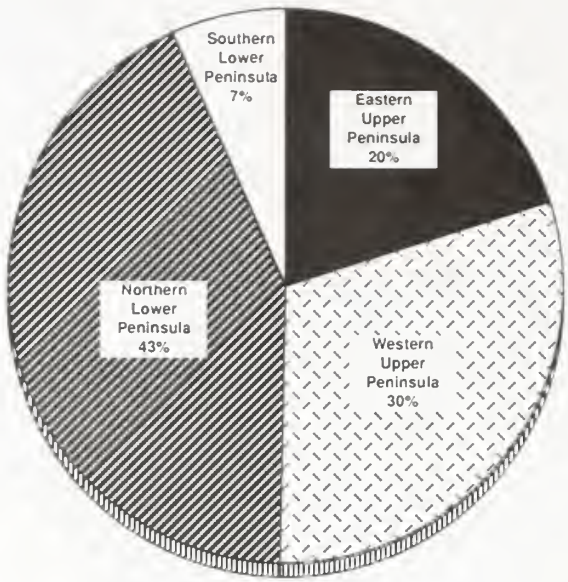

Figure 4.—*Distribution of industrial roundwood production by Forest Survey Unit, Michigan, 1994.*

crease from 1992. Much of the increase was concentrated in "other" hardwoods, birch, and aspen.

- Roundwood made up more than 92 percent of the pulpwood produced in 1994, and aspen and other hardwoods supplied nearly three-quarters of the roundwood.
- Michigan's pulpwood and particleboard mills consumed 90 percent of the State's production of pulpwood (table 5). The remainder was shipped out of State, mainly to Wisconsin, for processing.
- Aspen was the major species exported.
- The Western Upper Peninsula provided more than one-third of the roundwood pulpwood harvested in the State in 1994 (table 6).
- Three counties—Marquette, Ontonagon, and Iron—each reported more than 150 thousand cords of roundwood pulpwood harvested in 1994.
- Pulpwood receipts in 1994 totaled nearly 3.3 million cords, a 16-percent increase from 1992 (table 7). Most of the increase occurred in "other" hardwoods, birch, and aspen; pine declined slightly.
- In 1994, roundwood pulpwood made up more than 88 percent of the pulpwood received; aspen and pine combined supplied more than 63 percent of the roundwood.
- Michigan supplied nearly 90 percent of the pulpwood processed by its pulp and particleboard mills in 1994. The remainder was imported from neighboring States, mainly Wisconsin (table 8). Canada provided 72 thousand cords.
- Aspen, hard maple, and white birch were the main species imported (table 9).

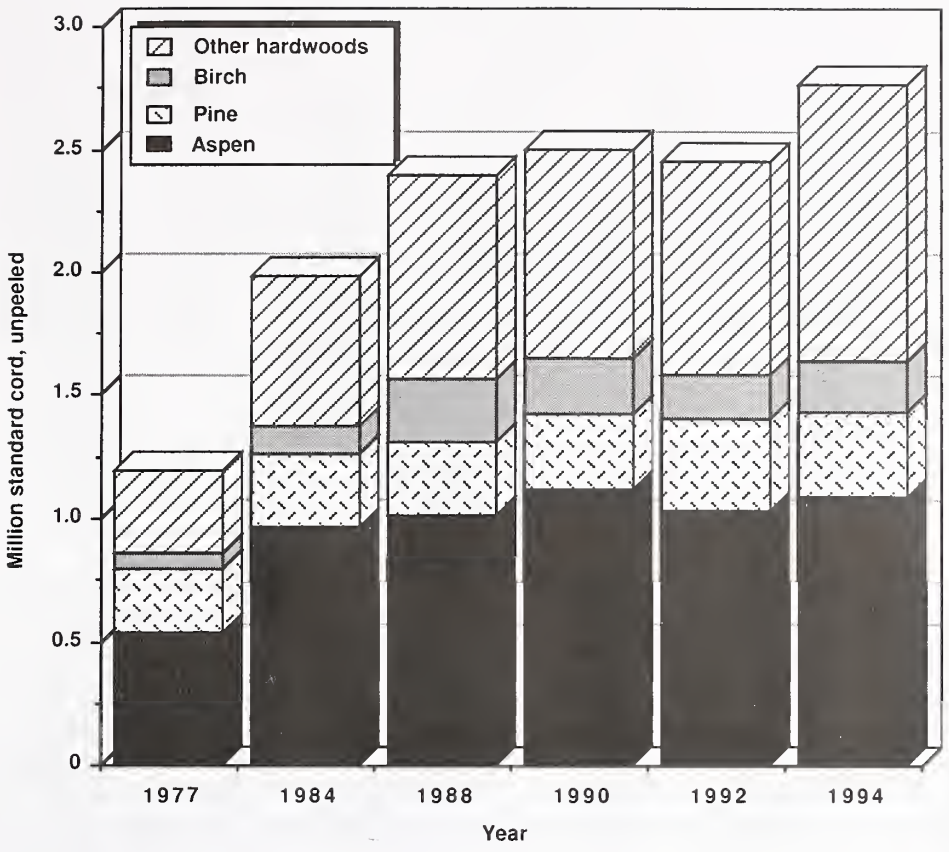

Figure 5.—*Pulpwood production of aspen and all species in Michigan for selected years.*

Pulpwood is a major industrial product in Michigan. A yearly study is done of all pulpmills and particleboard mills in the North Central Region. A separate publication is available from the Station.

SAW LOGS

- Loggers delivered 658 million board feet of Michigan saw logs to mills in Michigan, Wisconsin, Minnesota, other States, and Canada in 1994, up 4 percent (26 million board feet) from 1992 (table 10).

- Most of the increase was associated with soft and hard maple, and ash.

- Saw-log receipts also increased 3 percent; all of the increase was associated with hardwood saw logs especially soft and hard maple, and ash.

- Michigan sawmills processed more than 88 percent of the State's production of saw logs (table 11, fig. 6). The remainder was exported to Wisconsin, Indiana, Ohio, Minnesota, and Canada in 1994.

- Wisconsin and Indiana were the two largest recipients of Michigan saw logs. Aspen was the single largest species exported to Wisconsin, while red oak was the single largest species shipped to Indiana sawmills.

- The Upper Peninsula provided most of the saw-log volume that was exported to Wisconsin. The Southern Lower Peninsula shipped more than 23 million board feet of saw logs to Indiana.

- The Northern Lower Peninsula provided more than half of the State's production of saw logs (table 12).

- Major saw-log producing counties with more than 20 million board feet each were Newaygo and Gogebic Counties.

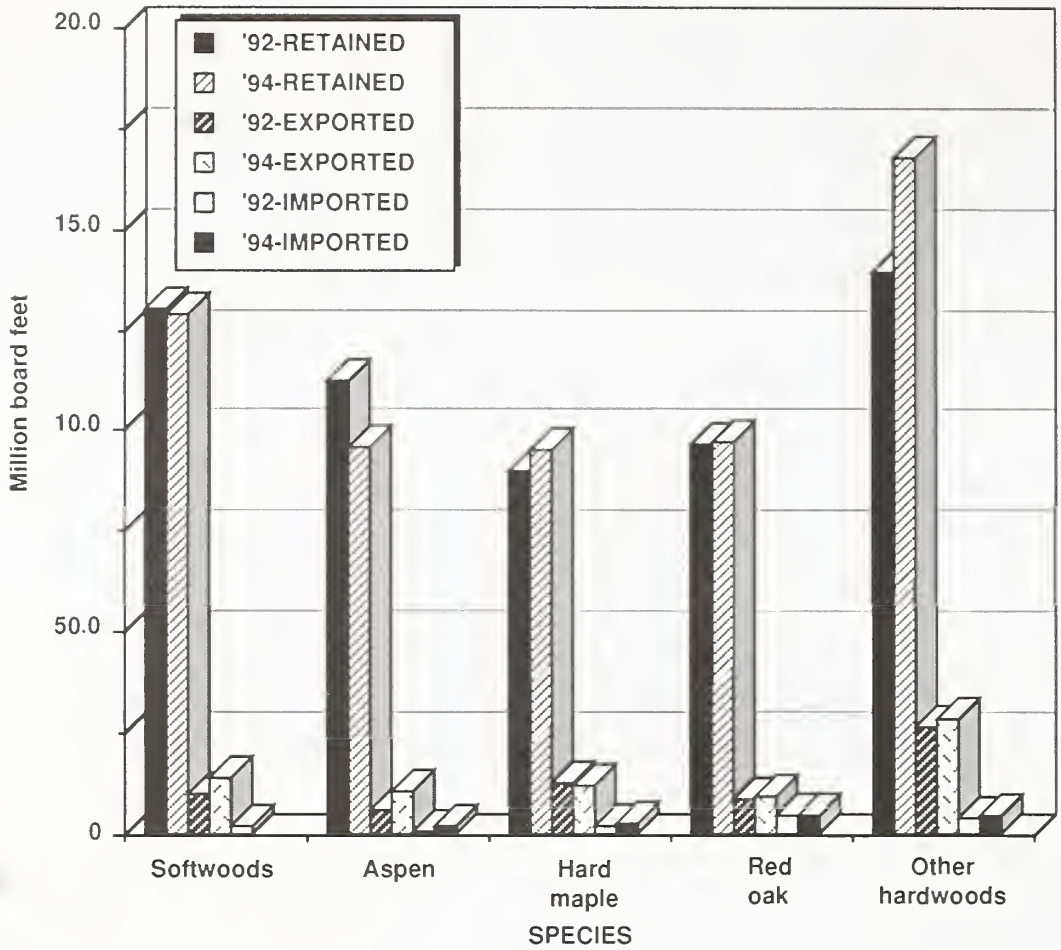

Figure 6.—*Saw-log production exported (mills outside Michigan), imported, and retained by select species in Michigan, 1992 and 1994.*

- Michigan supplied nearly 98 percent of the saw-log volume needed by its sawmills in 1994 (table 13). The remainder was imported mostly from Wisconsin, Indiana, Ohio, and Canada.

VENEER LOGS

- Between 1992 and 1994, veneer log production in Michigan increased by 29 percent—from 38 million board feet to 49 million board feet. During the same time, veneer log receipts increased by 10 percent to more than 44 million board feet (table 14).

- Hard maple veneer log production had a 45-percent increase between 1992 and 1994. Hard maple remained the single largest species of veneer log produced in Michigan, accounting for nearly 43 percent of all veneer logs produced in the State (table 15). In contrast, aspen was the single largest species of veneer log processed in the State in 1994, increasing by nearly 65 percent between surveys. Aspen accounted for more than half of all veneer logs processed in 1994.

- Michigan retained more than one-half of the veneer log volume it harvested in 1994 (table 16, fig. 7). The remainder was shipped out of State for processing, mostly to Wisconsin.

- Hard maple was the major species of veneer log exported from Michigan.

- Nearly 60 percent of all veneer log volume was produced in the Western Upper Peninsula.

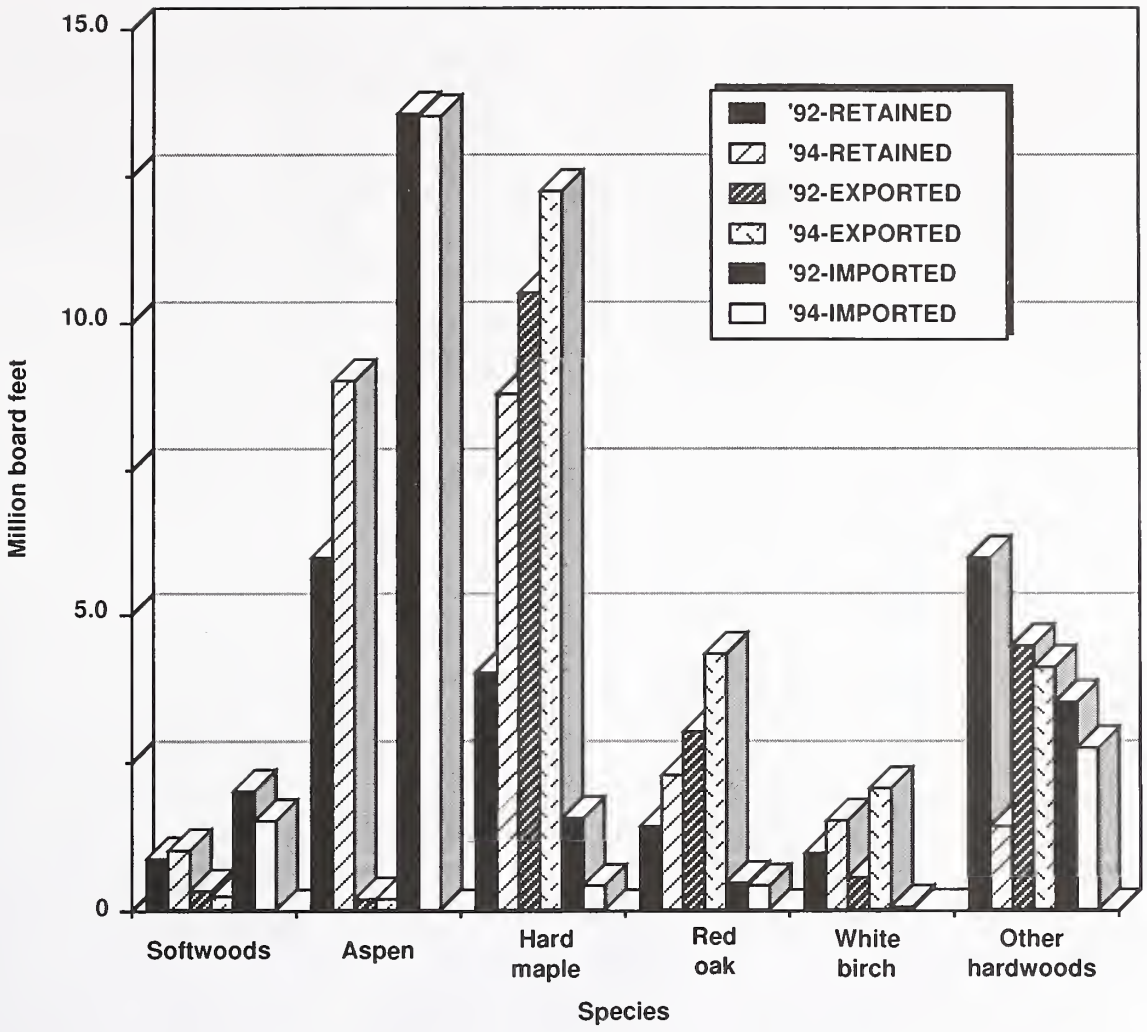

Figure 7.—*Veneer production exported (mills outside Michigan), imported, and retained by select species in Michigan, 1992 and 1994.*

- Michigan supplied 60 percent of the State's veneer log requirements in 1994 (table 17). Another 34 percent was provided by Wisconsin, and the remaining 6 percent was provided by Illinois, Indiana, other States outside the region, and Canada.

- Aspen, hard maple, red and white oak make up more than 80 percent of the veneer log volume processed in the State. More than 60 percent of the aspen processed in Michigan veneer mills came from Wisconsin (table 18).

OTHER PRODUCTS

- Industrial fuelwood totaled nearly 24 million cubic feet in 1994 and increased by 33 percent between surveys.

- All of the industrial fuelwood production occurred in hardwood species, mainly aspen and soft maple.

- The Northern Lower Peninsula produced the most industrial fuelwood in 1994 with 23 million cubic feet; the remaining 0.1 million cubic feet was harvested in the Eastern Upper Peninsula.

- In 1994, 3.1 million cubic feet of other industrial roundwood was harvested in Michigan. These products included excelsior/shaving bolts, cabin logs, mine timbers, posts, and poles products.

- Except for excelsior/shaving bolts and some posts, which were cut mainly from aspen and oak, respectively, almost all of the

volume for these other products was cut from softwood species. Red pine, white pine, and northern white-cedar were cut for posts. Red pine was also used for poles along with northern white-cedar.

- Pole production showed an increase between surveys due to increased demand for utility poles in the US and overseas. Cabin log production declined from 1.0 million cubic feet in 1992 to 712 thousand cubic feet in 1994—a nearly 29-percent drop.

Residential fuelwood is a major nonindustrial product in Michigan. The results of a residential fuelwood study conducted in 1992 are available in a separate Station publication.

TIMBER REMOVALS

- In the production of industrial roundwood in 1994, more than 354 million cubic feet of Michigan's growing-stock inventory was removed from timberland, a 10-percent increase from 1992 (tables 19, 20, and fig. 8).

- More than 50 percent of the growing-stock removals came from the Upper Peninsula, the region of the State where pulpwood production is concentrated.

- Aspen alone accounted for one-third of all growing-stock removals.

- Industrial roundwood harvesting also removed 1.1 billion board feet of wood from the sawtimber portion of the growing-stock inventory in 1994 (table 21), an 8-percent increase over 1992.

- More than half of all sawtimber removals (55 percent) occurred in the Lower Peninsula, the area of the State where saw-log production is concentrated.

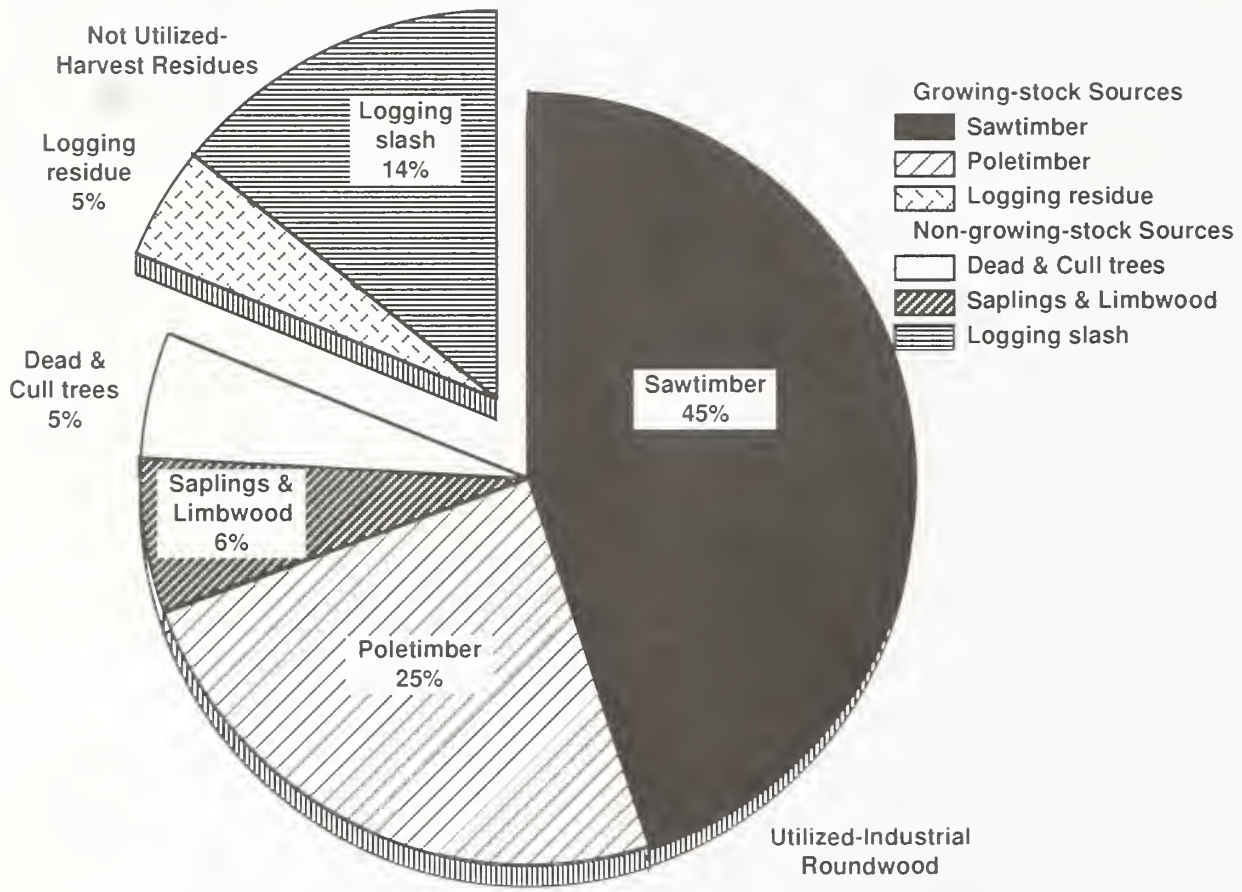

Figure 8.—*Distribution of timber removals for industrial roundwood by source of material, Michigan, 1994.*

- Sawtimber removals were concentrated in five species—aspen, red oak, hard and soft maple, and red pine—which together made up more than two-thirds of all sawtimber removals. Aspen alone accounted for nearly one-quarter of all sawtimber removals.

HARVEST RESIDUES

- In 1994, harvesting of industrial roundwood products left nearly 90 million cubic feet of harvest residues on the ground (table 22), approximately a 10-percent increase over 1992, which was generally due to the increase in harvesting of saw-logs and pulpwood in 1994.

- Nearly 60 percent of the harvest residues were left in the Upper Peninsula, and one-third were left in the Northern Lower Peninsula.

- Two species, aspen and hard maple, accounted for more than 45 percent of all harvest residues.

PRIMARY MILL RESIDUE

- In converting industrial roundwood into milled products, such as lumber, sheathing, and wood pulp, Michigan's primary wood-using industry generated 2.7 million green tons of wood and bark residues (table 23).

- Bark and coarse wood residues each made up about one-third of the total volume; fine wood residues made up the remainder (fig. 9).

- Almost all the mill residues were used; nearly 60 percent ended up as industrial fuel (fig. 10).

- Mill residues used for industrial fuelwood at the mills where they were produced accounted for 32 percent of the total residues; another 27 percent of the total was sold to other mills or industries before being burned.

- In general, most coarse wood residues were used for fiber products; most fine residues were used for either fuel or other products, such as mulch, and litter; and most bark was burned as fuel or used for mulch.

- More than two-fifths of the mill residues were generated in the Northern Lower Peninsula, and more than 90 percent of all unused mill residues were located in the Northern Lower Peninsula.

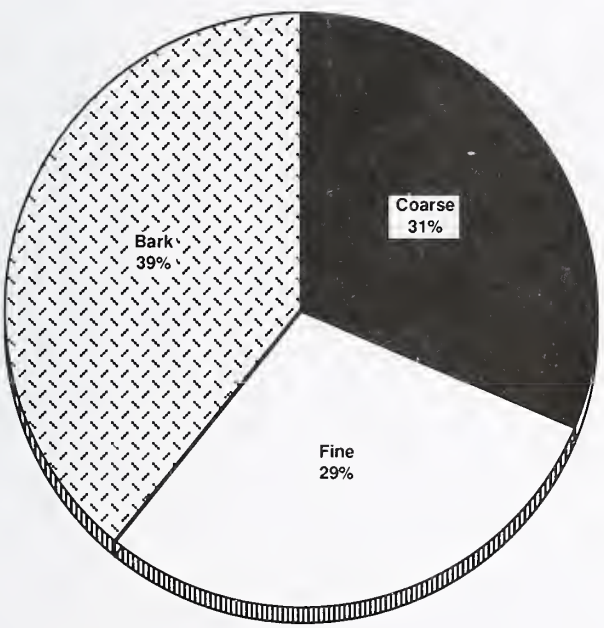

Figure 9.—*Distribution of residues generated by primary wood-using mills by type of residue, Michigan, 1994.*

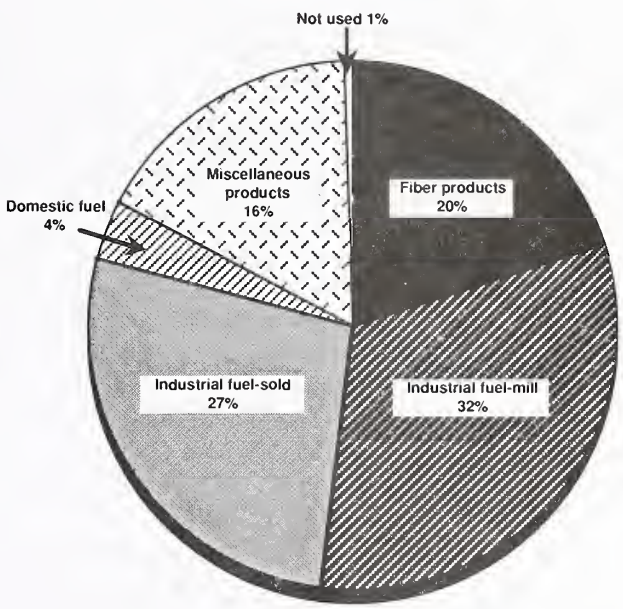

Figure 10.—*Distribution of residues generated by primary wood-using mills by method of disposal, Michigan, 1994.*

REGIONAL TRENDS

Western Upper Peninsula

- In 1994, 117 million cubic feet of roundwood was produced in the eight counties that make up the Western Upper Peninsula Unit of Michigan, and it accounted for more than 30 percent of the State's total output.
- The 117 million cubic feet of industrial roundwood reflects an increase of more than 4 percent between 1992 and 1994. Softwood output remained at the 1992 level in the unit while hardwood output went up by more than 5 percent.
- Saw-log production of nearly 22 million cubic feet accounted for 19 percent of the total roundwood production in this unit, near the same level as in 1992.
- Pulpwood production increased by more than 3 percent and accounted for more than three-quarters of the unit's total roundwood output.
- The Western Upper Peninsula produced nearly 20 percent of the State's saw logs, 63 percent of the veneer logs, more than 37 percent of the pulpwood, less than 1 percent of the industrial fuelwood, and nearly 18 percent of the roundwood used for other industrial products.
- In 1994, the Western Upper Peninsula had 26 sawmills, 2 pulpmills, 1 veneer mill, 1 particleboard mill, and 4 other miscellaneous mills.
- More than 15 percent of the sawmills in this region had receipts greater than 10 million board feet, while more than three-quarters of the mills had less than 5 million board feet of receipts.

Eastern Upper Peninsula

- Between 1992 and 1994, roundwood production from the seven counties that make up the Eastern Upper Peninsula Unit increased by 10 percent to 77 million cubic feet.
- This unit accounted for nearly one-fifth of the State's total roundwood output in 1994, the same level as in 1992.
- Saw-log production of 12 million cubic feet accounted for more than 15 percent of the total roundwood production in this unit.
- Pulpwood production increased by 7 percent between 1992 and 1994, and accounted for nearly four-fifths of the unit's total roundwood output in 1994.
- The Eastern Upper Peninsula produced more than 10 percent of the State's saw logs, more than one-quarter of the veneer logs, more than one-quarter of the pulpwood, less than 1 percent of the industrial fuelwood, and more than two-thirds of the roundwood used for other industrial products.
- In 1994, 54 mills—including 34 sawmills, 2 veneer mills, 1 pulpmill, 1 waferboard mill, and 16 miscellaneous mills—operated in the Eastern Upper Peninsula.
- Only two sawmills in the Eastern Upper Peninsula had receipts of more than 10 million board feet, while more than 90 percent of the sawmills had receipts less than 5 million board feet.

Northern Lower Peninsula

- The 33-county Northern Lower Peninsula Unit produced the largest amount of roundwood in the State. In 1994, this unit produced more than 166 million cubic feet of industrial roundwood, over 17 percent more than in 1992. Total production of industrial roundwood was 43 percent of the State's total industrial roundwood output.
- Saw-log production of more than 60 million cubic feet accounted for more than one-third of the total roundwood produced in this unit in 1994.
- Pulpwood production increased by nearly 33 percent between 1992 and 1994, and accounted for nearly one-half of the unit's total roundwood output in 1994.

- The Northern Lower Peninsula Unit produced nearly one-half of the State's saw logs, nearly 6 percent of the veneer logs, more than one-third of the pulpwood, nearly 100 percent of the industrial fuelwood, and more than 13 percent of the other industrial roundwood produced.

- In 1994, 178 mills—including 153 sawmills, 1 veneer mill, 3 pulpmills, 2 particleboard mills, and 19 miscellaneous mills—operated in the Northern Lower Peninsula.

- Less than 5 percent of the sawmills in the Northern Lower Peninsula had receipts of 10 million board feet or more.

Southern Lower Peninsula

- The 35 counties that make up the Southern Lower Peninsula Unit produced nearly 26 million cubic feet of industrial roundwood, over 13 percent more than in 1992. Total production of industrial roundwood in 1994 was nearly 7 percent of the State's total industrial roundwood output.

- Saw-log production increased by more than 3 percent to 19 million cubic feet in 1994. This volume accounted for nearly three-quarters of the unit's industrial roundwood production.

- Pulpwood production declined by two-thirds from 1992 to 5 million cubic feet of roundwood output in 1994. Pulpwood production accounted for nearly 20 percent of the unit's total roundwood output.

- The Southern Lower Peninsula Unit produced more than 16 percent of the State's saw logs, more than 15 percent of the veneer logs, 2 percent of the pulpwood, and nearly 2 percent of the other industrial products.

- In 1994, 72 mills—including 67 sawmills, 2 veneer mills, 2 pulpmills, and 1 miscellaneous mill—operated in the Southern Lower Peninsula.

- Only one sawmill in the unit had receipts of greater than 10 million board feet; more than 90 percent of the mills had receipts of less than 5 million board feet.

APPENDIX

STUDY METHODS

This study was a cooperative effort of the Michigan Department of Natural Resources (MIDNR) and the North Central Forest Experiment Station (NCFES). Using mail questionnaires supplied by NCFES and designed to determine the size and composition of the State's primary wood-using industry, its use of roundwood, and its generation and disposition of wood residues, the MIDNR canvassed all primary wood-using mills within the State. The MIDNR followed up on nonresponding mills by using additional mailings, telephone, and personal contacts until a 100-percent response was achieved. Completed questionnaires were sent to NCFES for editing and processing.

As part of data editing and processing, all industrial roundwood volumes reported on the questionnaires were converted to standard units of measure using regional conversion factors. Timber removals by source of material and harvest residues generated during logging were estimated from standard product volumes using factors developed from logging utilization studies previously conducted by NCFES. Finalized data on Michigan's industrial roundwood receipts were loaded into a regional timber removals database and supplemented with data on out-of-State uses of Michigan roundwood to provide a complete assessment of Michigan's timber product output.

DEFINITION OF TERMS

Board foot.—Unit of measure applied to roundwood. It relates to lumber that is 1 foot long, 1 foot wide, and 1 inch thick (or its equivalent).

Bolt.—A short log, that is no more than 16 to 20 feet long, to be sawn for lumber or peeled for veneer.

Central stem.—The portion of a tree between a 1-foot stump and the minimum 4.0-inch top diameter outside bark, or point where the central stem breaks into limbs.

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam, Osage-orange, and redbud.)

Cull removals.—Net volume of rough and rotten trees plus the net volume in sections of the central stem of growing-stock trees that do not meet regional merchantability standards, harvested for industrial roundwood products.

Dead removals.—Net volume of dead trees harvested for industrial roundwood products.

Diameter at breast height (d.b.h.).—The outside bark diameter at 4.5 feet above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide.

Growing-stock removals.—The growing-stock volume removed from the timberland inventory by harvesting industrial roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree.—A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Harvest residues.—The total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Industrial roundwood products.—Saw logs, pulpwood, veneer logs, poles, commercial posts, piling, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood exports.—The quantity of industrial roundwood harvested in a geographical area and transported to other geographical areas.

Industrial roundwood imports.—The quantity of industrial roundwood received from other geographical areas.

Industrial roundwood production.—The quantity of industrial roundwood harvested

in a geographic area plus all industrial roundwood exported to other geographical areas.

Industrial roundwood receipts.—The quantity of industrial roundwood harvested for commercial mills in a geographic area plus all industrial roundwood imported from other geographical areas.

Industrial roundwood retained.—The quantity of industrial roundwood harvested from and processed by commercial mills within the same geographical area.

International 1/4-inch rule.—A log rule or formula for estimating the board foot volume of logs, allowing 1/2-inch of taper for each 4-foot length. The rule appears in a number of forms that allow for kerf. In the form used by FIA, a 1/4-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Limbwood removals.—Net volume of all portions of a tree other than the central stem, (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

Logging residue.—The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash.—The net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

Merchantable sections.—Refers to sections of the central stem of growing-stock trees that meet either pulpwood or saw-log specifications.

Net volume.—Gross volume less deductions for rot, sweep, or other defects affecting use for roundwood products.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial roundwood products. Classified in volume tables as rough trees.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 39.9-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, improved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.)

Nonforest land removals.—Net volume of trees on nonforest lands harvested for industrial roundwood products.

Poletimber.—A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Poletimber removals.—Net volume in the merchantable central stem of poletimber trees harvested for industrial roundwood products.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some product.

Rotten tree.—A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree.—A tree that does not meet regional merchantability standards because of excessive sound cull. Includes noncommercial tree species.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling.—A live tree between 1.0 and 5.0 inches d.b.h.

Sapling removals.—Net volume in saplings harvested for industrial roundwood products.

Saw-log portion.—That portion of the central stem of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the central stem of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber removals.—As used in table 21, sawtimber removals refers to the net volume in the merchantable central stem of sawtimber trees harvested for industrial roundwood products. (Note: Includes the saw-log and upper stem portions of sawtimber trees.) When referring to the sawtimber volume removed from the timberland inventory as in table 19, sawtimber removals refers to the net volume in the saw-log portion of sawtimber trees harvested for roundwood products or left on the ground as harvest residue, and is usually expressed in thousands of board feet (International 1/4-inch rule).

Sawtimber tree.—A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.

Sawtimber volume.—Net volume in the saw-log portion of sawtimber trees.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Timber product output.—The volume of roundwood products produced from an area's forests.

Timberland.—Forest land that is producing, or is capable of producing, in excess of 20 cubic feet per acre per year of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development.

Tree.—A woody plant usually having one or more perennial stems, a more or less definitely formed crown of foliage, and a height of at least 12 feet at maturity.

Upper stem portion.—That portion of the central stem of sawtimber trees between the saw-log top and the minimum top diameter of 4.0 inches outside bark, or to the point where the central stem breaks into limbs.

Veneer log or bolt.—A log or bolt used in the production of plywood, finished panels, containers, or veneer sheets, both rotary cut and sliced.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS
Jack pine ..... *Pinus banksiana*
Red pine ..... *Pinus resinosa*
Eastern white pine ..... *Pinus strobus*
Spruce
  White spruce ..... *Picea glauca*
  Black spruce ..... *Picea mariana*
Balsam fir ..... *Abies balsamea*
Eastern hemlock ..... *Tsuga canadensis*
Tamarack ..... *Larix laricina*
Northern white-cedar ..... *Thuja occidentalis*
Eastern redcedar ..... *Juniperis virginiana*
HARDWOODS
White oak
  White oak ..... *Quercus alba*
  Bur oak ..... *Quercus macrocarpa*
  Chinkapin oak ..... *Quercus muehlenbergii*
  Swamp white oak ..... *Quercus bicolor*
Red oak
  Northern red oak ..... *Quercus rubra*
  Black oak ..... *Quercus velutina*
  Northern pin oak ..... *Quercus ellipsoidalis*
Hickory
  Bitternut hickory ..... *Carya cordiformis*
  Pignut hickory ..... *Carya glabra*
  Shagbark hickory ..... *Carya ovata*
White birch ..... *Betula papyrifera*
Yellow birch ..... *Betula alleghaniensis*
Hard maple
  Black maple ..... *Acer nigrum*
  Sugar maple ..... *Acer saccharum*
Soft maple
  Red maple ..... *Acer rubrum*
  Silver maple ..... *Acer saccharinum*

American beech ..... *Fagus grandifolia*
Ash
Black ash ..... *Fraxinus nigra*
White ash ..... *Fraxinus americana*
Green ash ..... *Fraxinus pennsylvanica*
Balsam poplar ..... *Populus balsamifera*
Aspen
Bigtooth aspen ..... *Populus grandidentata*
Quaking aspen ..... *Populus tremuloides*
Eastern cottonwood ..... *Populus deltoides*
American basswood ..... *Tilia americana*
Black walnut ..... *Juglans nigra*
Elm
American elm ..... *Ulmus americana*
Rock elm ..... *Ulmus thomasii*
Slippery elm ..... *Ulmus rubra*
Other hardwoods
Northern catalpa ..... *Catalpa speciosa*
Black cherry ..... *Prunus serotina*
River birch ..... *Betula nigra*
Black locust ..... *Robinia pseudoacacia*
Honeylocust ..... *Gleditsia triacanthos*
Red mulberry ..... *Morus rubra*
Butternut ..... *Juglans cinerea*
Black willow ..... *Salix nigra*
Boxelder ..... *Acer negundo*
Hackberry ..... *Celtis occidentalis*

TABLE TITLES

Table 1.—Number of active primary wood-using mills in Michigan, 1977, 1984, 1988, 1990, 1992, and 1994

Table 2.—Industrial roundwood receipts by mill type, Michigan, 1977, 1984, 1988, 1990, 1992, and 1994

Table 3.—Industrial roundwood production by Forest Survey Unit, species group, and type of product, Michigan, 1994

Table 4.—Michigan pulpwood production by species group, 1946-1994

Table 5.—Michigan pulpwood production by species group and destination, 1994

Table 6.—Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1994

Table 7.—Pulpwood receipts in Michigan by species group, 1946-1994

Table 8.—Pulpwood receipts in Michigan by area of origin, 1946-1994

Table 9.—Pulpwood receipts in Michigan by species group and area of origin, 1994

Table 10.—Saw-log production and receipts in Michigan by species group, 1992 and 1994

Table 11.—Saw-log production by Forest Survey Unit, species group, and State of destination, Michigan, 1994

Table 12.—Saw-log production by Forest Survey Unit, county, and species group, Michigan, 1994

Table 13.—Saw-log receipts by Forest Survey Unit, species group, and State of origin, Michigan, 1994

Table 14.—Veneer log production and receipts in Michigan for selected years, 1946-1994

Table 15.—Veneer log production and receipts by species group in Michigan, 1992 and 1994

Table 16.—Veneer log and bolt production by Forest Survey Unit, species group, and destination, Michigan, 1994

Table 17.—Veneer log receipts in Michigan by area of origin for selected years, 1946-1994

Table 18.—Veneer log and bolt receipts by species group and State of origin, Michigan, 1994

Table 19.—Wood material harvested for industrial roundwood by Forest Survey Unit, source of material, and species group, Michigan, 1994

Table 20.—Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1994

Table 21.—Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1994

Table 22.—Harvest residues generated by industrial roundwood harvesting by Forest Survey Unit, county, and species group, Michigan, 1994

Table 23.—Residues produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Michigan, 1994

Table 1.--Number of active primary wood-using mills in Michigan, 1977, 1984, 1988, 1990, 1992, and 1994

Kind of mill	1977	1984	1988	1990	1992	1994
Sawmills 1/						
Large 2/	20	26	31	26	30	36
Medium 3/	86	94	117	103	107	99
Small 4/	196	176	136	171	139	109
Total	302	296	284	300	276	244
Pulp mills 5/	8	9	12	12	11	11
Veneer mills	9	8	8	8	7	5
Other mills	19	26	32	35	23	24
Total	36	43	52	55	41	40
Total mills	338	339	336	355	317	284

1/ Mills persistently sawing 50 mbf or more annually.
(32 mills sawed under 50 mbf/year.)

2/ Annual lumber production in excess of 5 million board feet.

3/ Annual lumber production from 1 million to 5 million board feet.

4/ Annual lumber production from 50 thousand to 1 million board feet.

5/ Includes flake board plants after 1977, formerly reported in "other mills" category.

Table 2.--Industrial roundwood receipts by mill type, Michigan, 1977, 1984, 1988, 1990, 1992, and 1994

(In million cubic feet)

Kind of mill	1977	1984	1988	1990	1992	1994
All species						
Pulp mills 1/	82.4	143.2	205.7	214.4	200.6	207.6
Sawmills	78.7	83.2	98.3	107.4	100.1	99.4
Other mills 2/	15	4.2	6.4	7.1	28.5	27.7
Total	176.1	230.6	310.4	328.9	329.2	334.6
Softwoods						
Pulp mills 1/	28.2	30.4	36.9	41.2	33.1	29.8
Sawmills	10.5	10.3	18.5	23.3	22.7	21.3
Other mills 2/	3.4	2.3	0.1	0.7	13.1	8.9
Total	42.1	43	55.5	65.2	68.8	60.0
Hardwoods						
Pulp mills 1/	54.2	112.8	168.8	173.2	167.5	177.8
Sawmills	68.2	72.9	79.8	84.1	77.4	78.0
Other mills 2/	11.6	1.9	6.3	6.4	15.4	18.8
Total	134	187.6	254.9	263.7	260.4	274.6

1/ Includes flakeboard plants after 1977, formerly reported in "other mill" category.

2/ Does not include treating plants or fuelwood receipts.

Table 3.--Industrial roundwood production by Forest Survey Unit, species group, and type of product, Michigan, 1994 1/

ALL UNITS

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Mine timbers	Poles		Posts		All products
	MBF 2/	*MCF 3/*	*MBF 2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*MCF /3*	*Cords 5/*	*MCF 3/*	*MCF 3/*	*MCF 3/*	*Pieces*	*MCF 3/*	*M pieces*	*MCF 3/*	*MCF 3/*
SOFTWOODS																
Balsam fir	553	104	--	--	102,769	8,119	--	19,676	1,375	--	--	--	--	37	38	9,636
Redcedar	162	31	--	--	--	--	--	--	--	--	--	--	--	38	39	70
Tamarack	52	10	89	14	7,624	602	--	--	--	--	--	--	--	--	--	627
Spruce	5,062	953	492	80	62,081	4,904	4	5,733	401	--	--	--	--	14	14	6,357
Jack pine	11,684	2,200	--	--	272,614	21,537	--	42,178	2,948	--	--	--	--	--	--	26,685
Red pine	93,261	15,640	168	27	56,040	4,427	256	43,671	3,053	--	5	29,908	179	7	7	23,595
White pine	14,019	2,351	486	79	14,992	1,184	21	--	--	--	9	--	--	--	--	3,645
N. white-cedar	13,601	2,561	--	--	8,023	634	430	--	--	--	--	300	2	2,017	2,074	5,700
Hemlock	4,594	770	--	--	68,091	5,379	--	--	--	--	--	--	--	--	--	6,150
Total	142,988	24,620	1,234	201	592,234	46,786	712	111,258	7,777	--	15	30,208	181	2,112	2,172	82,463
HARDWOODS																
Soft maple	67,946	11,931	924	150	334,180	26,400	--	63,067	4,408	--	2	--	--	--	--	42,892
Hard maple	107,324	17,408	21,002	3,419	402,114	31,767	--	4,235	296	--	2	--	--	--	--	52,892
White birch	9,852	1,730	3,548	578	175,226	13,843	--	12,042	842	--	--	--	--	--	--	16,992
Yellow birch	9,642	1,624	1,944	316	37,369	2,952	--	117	8	--	--	--	--	--	--	4,900
Hickory	2,337	394	62	10	209	17	--	717	50	--	--	--	--	--	--	470
Hackberry	610	107	--	--	--	--	--	--	--	--	--	--	--	--	--	107
Beech	11,501	1,937	851	138	31,536	2,491	--	344	24	--	--	--	--	--	--	4,591
Ash	25,689	4,326	1,118	182	38,504	3,042	--	134	9	--	--	--	--	--	--	7,560
Black walnut	1,397	235	324	53	--	--	--	--	--	--	--	--	--	--	--	288
Yellow-poplar	1,735	305	26	4	--	--	--	--	--	--	--	--	--	--	--	309
Sycamore	832	146	--	--	--	--	--	--	--	--	--	--	--	--	--	146
Cottonwood	3,212	564	--	--	2,109	167	--	--	--	--	--	--	--	--	--	731
Balsam poplar	152	27	--	--	69,066	5,456	--	--	--	--	--	--	--	--	--	5,483
Aspen	106,067	18,657	9,185	1,495	1,084,306	85,660	--	100,493	7,024	639	--	--	--	--	--	113,476
Black cherry	9,357	1,643	587	96	5,318	420	--	90	6	--	--	--	--	--	--	2,165
Red oak group	106,183	18,635	6,607	1,076	129,307	10,215	--	47,722	3,336	--	--	--	--	20	30	33,292
White oak group	21,377	3,752	1,075	175	36,954	2,919	--	--	--	--	--	--	--	--	--	6,846
Willow	184	32	--	--	--	--	--	--	--	--	--	--	--	--	--	32
Basswood	28,924	5,079	572	93	60,995	4,819	--	--	--	57	--	--	--	--	--	10,048
Elm	796	140	26	4	611	48	--	--	--	--	--	--	--	--	--	192
Other hardwoods	157	28	13	2	12,778	1,009	--	--	--	--	--	--	--	--	--	1,039
Total	515,273	88,699	47,862	7,792	2,420,581	191,226	--	228,960	16,004	696	4	--	--	20	30	304,450
All species	658,261	113,319	49,096	7,993	3,012,815	238,012	712	340,217	23,781	696	18	30,208	181	2,132	2,202	386,914

(Table 3 continued on next page)

(Table 3 continued)

EASTERN UPPER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Mine timbers	Poles		Posts		All products
	MBF 2/	*MCF 3/*	*MBF 2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*MCF 3/*	*Cords 5/*	*MCF 3/*	*MCF 3/*	*MCF 3/*	*Pieces*	*MCF 3/*	*M pieces*	*MCF 3/*	*MCF 3/*
SOFTWOODS																
Balsam fir	209	39	--	--	55,117	4,354	--	--	--	--	--	--	--	37	38	4,431
Tamarack	--	--	22	4	4,466	353	--	--	--	--	--	--	--	--	--	356
Spruce	2,134	402	25	4	22,722	1,795	4	--	--	--	--	--	--	14	14	2,219
Jack pine	211	40	--	--	81,415	6,432	--	--	--	--	--	--	--	--	--	6,472
Red pine	5,468	917	7	1	21,137	1,670	177	--	--	--	--	8,308	50	7	7	2,822
White pine	2,124	356	129	21	8,123	642	2	--	--	--	--	--	--	--	--	1,021
N. white-cedar	8,672	1,633	--	--	4,868	385	379	--	--	--	--	--	--	1,222	1,257	3,653
Hemlock	121	20	--	--	33,647	2,658	--	--	--	--	--	--	--	--	--	2,678
Total	18,939	3,407	182	30	231,494	18,288	562	--	--	--	--	8,308	50	1,280	1,316	23,653
HARDWOODS																
Soft maple	8,407	1,476	200	33	90,689	7,164	--	76	5	--	--	--	--	--	--	8,679
Hard maple	13,848	2,246	5,231	852	124,233	9,814	--	633	44	--	--	--	--	--	--	12,957
White birch	3,827	672	1,544	251	53,271	4,208	--	100	7	--	--	--	--	--	--	5,139
Yellow birch	1,766	297	901	147	21,422	1,692	--	117	8	--	--	--	--	--	--	2,145
Hickory	--	--	--	--	--	--	--	717	50	--	--	--	--	--	--	50
Beech	5,249	884	125	20	13,937	1,101	--	286	20	--	--	--	--	--	--	2,025
Ash	768	129	93	15	5,192	410	--	75	5	--	--	--	--	--	--	560
Balsam poplar	37	6	--	--	29,556	2,335	--	--	--	--	--	--	--	--	--	2,341
Aspen	10,895	1,917	385	63	181,296	14,322	--	--	--	639	--	--	--	--	--	16,940
Black cherry	601	105	92	15	3,102	245	--	90	6	--	--	--	--	--	--	372
Red oak group	813	143	1,094	178	4,980	393	--	11	1	--	--	--	--	--	--	715
White oak group	--	--	4	1	65	5	--	--	--	--	--	--	--	--	--	6
Basswood	4,094	719	5	1	8,724	689	--	--	--	57	--	--	--	--	--	1,466
Elm	163	29	--	--	30	2	--	--	--	--	--	--	--	--	--	31
Other hardwoods	--	--	--	--	5,031	397	--	--	--	--	--	--	--	--	--	397
Total	50,467	8,624	9,674	1,575	541,528	42,781	--	2,105	147	696	--	--	--	--	--	53,822
All species	69,406	12,031	9,857	1,605	773,022	61,069	562	2,105	147	696	--	8,308	50	1,280	1,316	77,475

(Table 3 continued on next page)

(Table 3 continued)

WESTERN UPPER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Mine timbers	Poles		Posts		All products
	MBF 2/	*MCF 3/*	*MBF 2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*MCF 3/*	*Cords 5/*	*MCF 3/*	*MCF 3/*	*MCF 3/*	*Pieces*	*MCF 3/*	*M pieces*	*MCF 3/*	*MCF 3/*
SOFTWOODS																
Balsam fir	277	52	--	--	45,276	3,577	--	--	--	--	--	--	--	--	--	3,629
Tamarack	40	7	67	11	3,158	249	--	--	--	--	--	--	--	--	--	268
Spruce	2,871	541	467	76	38,304	3,026	--	--	--	--	--	--	--	--	--	3,643
Jack pine	1,797	338	--	--	77,537	6,125	--	--	--	--	--	--	--	--	--	6,464
Red pine	4,128	692	161	26	17,197	1,359	11	--	--	--	5	1,620	10	--	--	2,103
White pine	4,780	802	286	47	5,974	472	6	--	--	--	9	--	--	--	--	1,335
N. white-cedar	1,980	373	--	--	2,975	235	39	--	--	--	--	--	--	509	524	1,171
Hemlock	4,140	694	--	--	34,432	2,720	--	--	--	--	--	--	--	--	--	3,414
Total	20,014	3,500	981	160	224,854	17,763	56	--	--	--	15	1,620	10	509	524	22,027
HARDWOODS																
Soft maple	14,836	2,605	723	118	123,511	9,757	--	134	9	--	2	--	--	--	--	12,491
Hard maple	44,229	7,174	11,587	1,886	227,219	17,950	--	244	17	--	2	--	--	--	--	27,029
White birch	3,310	581	1,958	319	71,524	5,650	--	64	4	--	--	--	--	--	--	6,555
Yellow birch	7,514	1,265	1,043	170	15,942	1,259	--	--	--	--	--	--	--	--	--	2,695
Beech	551	93	102	17	7,805	617	--	--	--	--	--	--	--	--	--	726
Ash	2,087	352	286	47	21,433	1,693	--	13	1	--	--	--	--	--	--	2,092
Balsam poplar	20	3	--	--	31,193	2,464	--	--	--	--	--	--	--	--	--	2,468
Aspen	22,146	3,895	8,800	1,433	359,890	28,431	--	--	--	--	--	--	--	--	--	33,759
Black cherry	1,369	240	9	1	2,217	175	--	--	--	--	--	--	--	--	--	417
Red oak group	3,607	633	2,723	443	14,661	1,158	--	27	2	--	--	--	--	--	--	2,236
White oak group	104	18	1	*	755	60	--	--	--	--	--	--	--	--	--	78
Basswood	7,783	1,367	532	87	33,576	2,653	--	--	--	--	--	--	--	--	--	4,106
Elm	72	13	--	--	216	17	--	--	--	--	--	--	--	--	--	30
Other hardwoods	--	--	--	--	5,533	437	--	--	--	--	--	--	--	--	--	437
Total	107,628	18,240	27,766	4,520	915,475	72,323	--	482	34	--	4	--	--	--	--	95,120
All species	127,641	21,740	28,747	4,680	1,140,329	90,086	56	482	34	--	18	1,620	10	509	524	117,147

(Table 3 continued on next page)

(Table 3 continued)

NORTHERN LOWER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Mine timbers	Poles		Posts		All products
	MBF 2/	*MCF 3/*	*MBF 2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*MCF 3/*	*Cords 5/*	*MCF 3/*	*MCF 3/*	*MCF 3/*	*Pieces*	*MCF 3/*	*M pieces*	*MCF 3/*	*MCF 3/*
SOFTWOODS																
Balsam fir	68	13	--	--	2,377	188	--	19,676	1,375	--	--	--	--	--	--	1,576
Tamarack	13	2	--	--	--	--	--	--	--	--	--	--	--	--	--	2
Spruce	56	11	--	--	1,055	83	--	5,733	401	--	--	--	--	--	--	495
Jack pine	9,676	1,822	--	--	113,653	8,979	--	42,178	2,948	--	--	--	--	--	--	13,749
Red pine	75,968	12,740	--	--	17,688	1,397	66	43,671	3,053	--	--	17,460	105	--	--	17,360
White pine	6,886	1,155	71	12	894	71	13	--	--	--	--	--	--	--	--	1,250
N. white-cedar	2,948	555	--	--	180	14	11	--	--	--	--	300	2	285	293	875
Hemlock	317	53	--	--	--	--	--	--	--	--	--	--	--	--	--	53
Total	95,931	16,350	71	12	135,847	10,732	90	111,258	7,777	--	--	17,760	106	285	293	35,360
HARDWOODS																
Soft maple	30,914	5,428	--	--	113,479	8,965	--	62,857	4,394	--	--	--	--	--	--	18,787
Hard maple	39,861	6,465	629	102	49,114	3,880	--	3,358	235	--	--	--	--	--	--	10,683
White birch	2,550	448	--	--	49,578	3,917	--	11,878	830	--	--	--	--	--	--	5,195
Yellow birch	323	54	--	--	5	*	--	--	--	--	--	--	--	--	--	55
Hickory	34	6	1	*	104	8	--	--	--	--	--	--	--	--	--	14
Beech	4,037	680	201	33	8,851	699	--	58	4	--	--	--	--	--	--	1,416
Ash	11,351	1,912	324	53	10,912	862	--	46	3	--	--	--	--	--	--	2,830
Black walnut	13	2	--	--	--	--	--	--	--	--	--	--	--	--	--	2
Cottonwood	974	171	--	--	2,057	163	--	--	--	--	--	--	--	--	--	333
Balsam poplar	96	17	--	--	8,317	657	--	--	--	--	--	--	--	--	--	674
Aspen	70,276	12,362	--	--	527,004	41,633	--	100,493	7,024	--	--	--	--	--	--	61,019
Black cherry	2,092	367	93	15	--	--	--	--	--	--	--	--	--	--	--	382
Red oak group	68,035	11,940	1,093	178	91,198	7,205	--	47,684	3,333	--	--	--	--	20	30	22,686
White oak group	8,976	1,575	270	44	17,822	1,408	--	--	--	--	--	--	--	--	--	3,027
Willow	108	19	--	--	--	--	--	--	--	--	--	--	--	--	--	19
Basswood	14,106	2,477	29	5	17,906	1,415	--	--	--	--	--	--	--	--	--	3,896
Elm	150	26	10	2	313	25	--	--	--	--	--	--	--	--	--	53
Other hardwoods	3	1	--	--	2,202	174	--	--	--	--	--	--	--	--	--	175
Total	253,899	43,950	2,651	432	898,862	71,010	--	226,373	15,823	--	--	--	--	20	30	131,245
All species	349,829	60,301	2,721	443	1,034,709	81,742	90	337,630	23,600	--	--	17,760	106	305	323	166,606

(Table 3 continued on next page)

(Table 3 continued)

SOUTHERN LOWER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Mine timbers	Poles		Posts		All products
	MBF 2/	*MCF 3/*	*MBF 2/*	*MCF 3/*	*Cords 4/*	*MCF 3/*	*MCF 3/*	*Cords 5/*	*MCF 3/*	*MCF 3/*	*MCF 3/*	*Pieces*	*MCF 3/*	*M pieces*	*MCF 3/*	*MCF 3/*
SOFTWOODS																
Redcedar	162	31	--	--	--	--	--	--	--	--	--	--	--	38	39	70
Jack pine	--	--	--	--	9	1	--	--	--	--	--	--	--	--	--	1
Red pine	7,697	1,291	--	--	17	1	3	--	--	--	--	2,520	15	--	--	1,310
White pine	229	38	--	--	--	--	1	--	--	--	--	--	--	--	--	39
Hemlock	17	3	--	--	13	1	--	--	--	--	--	--	--	--	--	4
Total	8,105	1,363	--	--	39	3	4	--	--	--	--	2,520	15	38	39	1,424
HARDWOODS																
Soft maple	13,789	2,421	--	--	6,502	514	--	--	--	--	--	--	--	--	--	2,935
Hard maple	9,385	1,522	3,555	579	1,547	122	--	--	--	--	--	--	--	--	--	2,223
White birch	165	29	46	7	853	67	--	--	--	--	--	--	--	--	--	104
Yellow birch	39	7	--	--	--	--	--	--	--	--	--	--	--	--	--	7
Hickory	2,303	388	60	10	105	8	--	--	--	--	--	--	--	--	--	406
Hackberry	610	107	--	--	--	--	--	--	--	--	--	--	--	--	--	107
Beech	1,665	280	423	69	943	74	--	--	--	--	--	--	--	--	--	424
Ash	11,482	1,934	414	67	967	76	--	--	--	--	--	--	--	--	--	2,077
Black walnut	1,385	233	324	53	--	--	--	--	--	--	--	--	--	--	--	286
Yellow-poplar	1,735	305	26	4	--	--	--	--	--	--	--	--	--	--	--	309
Sycamore	832	146	--	--	--	--	--	--	--	--	--	--	--	--	--	146
Cottonwood	2,239	393	--	--	52	4	--	--	--	--	--	--	--	--	--	397
Aspen	2,750	484	--	--	16,116	1,273	--	--	--	--	--	--	--	--	--	1,757
Black cherry	5,296	930	392	64	--	--	--	--	--	--	--	--	--	--	--	994
Red oak group	33,728	5,919	1,697	276	18,468	1,459	--	--	--	--	--	--	--	--	--	7,655
White oak group	12,297	2,158	800	130	18,312	1,447	--	--	--	--	--	--	--	--	--	3,735
Willow	76	13	--	--	--	--	--	--	--	--	--	--	--	--	--	13
Basswood	2,941	516	5	1	789	62	--	--	--	--	--	--	--	--	--	580
Elm	410	72	16	3	52	4	--	--	--	--	--	--	--	--	--	79
Other hardwoods	154	27	13	2	11	1	--	--	--	--	--	--	--	--	--	30
Total	103,280	17,885	7,771	1,265	64,717	5,113	--	--	--	--	--	--	--	--	--	24,263
All species	111,385	19,247	7,771	1,265	64,755	5,116	4	--	--	--	--	2,520	15	38	39	25,686

1/ Product volumes converted to standard units of measure using regional conversion factors and to thousand cubic feet using factors from the Michigan Utilization Study of 1980 and other regional utilization studies.

2/ Thousand board feet, International 1/4-inch rule.

3/ Thousand cubic feet.

4/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

5/ Standard cords are 128 cubic feet consisting of 70 cubic feet of wood and 58 cubic feet of bark and air space.

** = Less than 1/2 unit of measure.*

Rows and columns may not sum due to rounding.

Table 4.--Michigan pulpwood production by species group, 1946-1994

(In thousand standard cords, unpeeled) 1/

Year	Roundwood									Residue	
	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	845	85	117	250	127	3	246	9	8	--	--
1947	679	86	139	149	134	2	153	6	10	--	--
1948	728	89	163	132	133	2	182	7	19	--	1
1949	519	38	124	62	97	2/	168	5	25	--	--
1950	657	66	123	84	99	2/	251	6	28	--	--
1951	935	103	140	169	110	2/	371	8	34	--	--
1952	762	58	153	125	120	2/	275	8	23	--	--
1953	724	67	102	71	81	2/	365	5	33	--	--
1954	797	43	137	62	119	1	404	5	26	--	--
1955	808	38	122	36	111	2/	459	4	38	--	--
1956	966	67	119	88	115	2/	537	4	36	--	--
1957	980	70	147	61	118	2/	521	7	56	--	--
1958	900	149	115	35	86	1	434	1	79	--	--
1959	1,053	197	109	39	83	3	523	4	90	1	4
1960	1,237	188	135	46	108	5	669	9	75	--	2
1961	1,106	156	115	44	96	4	558	16	96	2	19
1962	1,223	184	104	57	86	4	601	21	144	2	20
1963	1,297	174	121	62	88	3	662	23	131	4	29
1964	1,322	198	85	59	72	3	674	38	146	5	42
1965	1,365	224	74	64	65	2	704	32	149	5	46
1966	1,571	251	88	99	74	1	777	12	194	4	71
1967	1,344	193	90	60	75	1	646	11	200	3	65
1968	1,168	205	62	45	39	2	540	13	172	6	84
1969	1,302	207	44	63	39	2	606	23	196	8	114
1970	1,406	239	67	69	51	3	596	33	196	10	142
1971	1,267	235	53	43	45	2	548	23	196	13	109
1972	1,401	229	60	50	38	7	529	36	309	21	122
1973	1,585	204	68	58	46	5	603	59	365	28	149
1974	1,843	259	74	52	40	7	706	85	424	17	179
1975	1,280	235	74	50	45	5	436	36	217	22	160
1976	1,541	281	75	79	32	6	491	69	320	24	164
1977	1,595	262	94	62	48	10	532	62	333	21	171
1978	1,675	277	87	48	42	8	586	90	390	17	130
1979 3/	1,981	350	85	45	39	10	709	109	456	15	163
1980	1,969	268	109	58	58	13	705	104	501	15	138
1981	1,838	237	104	39	45	17	652	105	473	15	151
1982	1,751	262	105	56	68	22	632	89	396	13	108
1983	2,157	256	101	48	78	31	889	130	451	21	152
1984	2,398	293	78	47	77	24	962	120	607	23	167
1985	2,376	314	93	37	84	53	977	110	545	17	146
1986	2,807	315	96	43	93	56	979	221	812	53	139
1987	2,746	292	98	39	97	68	896	228	799	72	157
1988	2,919	298	118	35	93	36	1,009	259	826	69	176
1989	3,114	254	143	42	115	44	1,104	280	871	79	182
1990	2,982	300	86	56	66	14	1,115	228	851	84	182
1991	3,016	309	103	47	64	16	1,093	188	942	76	176
1992	2,877	363	83	37	70	13	1,033	183	867	74	154
1993	3,155	380	101	37	67	12	1,142	197	973	72	174
1994	3,254	344	103	68	62	16	1,084	212	1,124	72	169

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

Table 5.--Michigan pulpwood production by species group and destination, 1994

(In thousand standard cords, unpeeled) 1/

Class of material and species group	Total	Michigan	Minnesota	Wisconsin	Canada
ROUNDWOOD					
SOFTWOODS					
N. white-cedar	8	8	--	*	--
Balsam fir	103	77	9	13	4
Hemlock	68	65	--	3	--
Jack pine	273	185	--	88	--
Red pine	56	43	--	13	--
White pine	15	14	--	1	--
Spruce	62	18	7	29	8
Tamarack	8	7	--	1	--
Total	593	417	16	148	12
HARDWOODS					
Ash	39	36	--	3	--
Aspen	1,084	977	1	106	--
Balsam poplar	69	69	--	*	--
Basswood	61	59	--	2	--
Beech	32	32	--	--	--
White birch	175	169	--	6	--
Yellow birch	37	37	--	*	--
Cottonwood	2	2	--	--	--
Elm	--	*	--	*	--
Hickory	--	*	--	--	--
Hard maple	402	393	--	9	--
Soft maple	334	327	--	7	--
Red oak	129	126	--	3	--
White oak	37	36	--	1	--
Other hardwoods	18	17	--	1	--
Total	2,419	2,280	1	138	--
Total roundwood	3,012	2,697	17	286	12
RESIDUES 2/					
Softwood	72	69	--	3	--
Hardwood	169	147	--	22	--
Total	241	216	--	25	--
ALL MATERIAL	3,253	2,913	17	311	12

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

** = Less than 500 cords.*

Rows and columns may not sum due to rounding.

Table 6.--Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1994

(In standard cords, unpeeled)

Forest Survey Unit and county[1]	All species	Species group: Northern white-cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Eastern Upper Peninsula												
Alger	137,519	661	6,612	6,486	10,261	4,530	1,106	1,629	626	1,243	23,672	3,524
Chippewa	107,527	982	10,395	4,695	20,690	3,826	1,683	4,109	847	368	24,003	7,206
Delta	146,953	790	8,499	4,761	14,680	3,195	1,375	3,439	752	840	45,189	4,689
Luce	72,399	553	5,622	5,744	8,698	2,315	924	3,284	496	560	10,275	467
Mackinac	94,285	508	5,669	2,245	4,509	2,022	735	4,127	393	530	30,202	6,868
Menominee	98,682	277	7,578	1,502	3,343	1,281	464	2,579	308	948	32,528	2,879
Schoolcraft	115,657	1,097	10,742	8,213	19,233	3,970	1,835	3,556	1,043	704	15,429	3,924
Total	773,022	4,868	55,117	33,647	81,415	21,137	8,123	22,722	4,466	5,192	181,296	29,556
Western Upper Peninsula												
Baraga	91,385	170	2,073	1,442	2,995	871	285	953	215	1,809	31,138	3,023
Dickinson	113,903	405	4,647	2,290	11,732	2,811	813	4,779	501	735	55,312	2,407
Gogebic	84,784	-	3,252	906	516	215	123	3,965	-	2,550	20,255	1,155
Houghton	127,812	187	3,655	1,654	5,220	1,344	398	2,410	168	3,627	27,962	3,196
Iron	183,759	564	12,355	3,633	10,686	4,079	1,229	11,142	578	2,543	61,070	6,185
Keweenaw	19,322	-	-	27	-	111	-	198	-	695	5,090	170
Marquette	326,296	1,646	17,435	23,962	36,943	6,019	2,847	12,581	1,687	1,954	76,699	9,172
Ontonagon	193,067	4	1,858	516	9,446	1,748	279	2,275	10	7,519	82,364	5,884
Total	1,140,329	2,975	45,276	34,432	77,537	17,197	5,974	38,304	3,158	21,433	359,890	31,193
Northern Lower Peninsula												
Alcona	52,371	-	26	-	788	43	4	16	-	582	33,748	1,959
Alpena	19,022	18	270	-	483	133	5	84	-	638	11,900	354
Antrim	8,444	-	-	-	68	383	-	-	-	147	3,729	6
Arenac	14,831	-	-	-	195	8	-	-	-	123	11,146	106
Bay	329	-	-	-	-	-	-	-	-	-	329	-
Benzie	19,566	-	-	-	-	53	-	-	-	585	6,621	-
Charlevoix	17,593	16	127	-	171	640	-	30	-	51	12,501	-
Cheboygan	58,121	96	864	-	11,942	666	118	270	-	234	30,825	373
Clare	59,207	-	-	-	667	-	-	-	-	71	46,011	25
Crawford	53,372	27	213	-	23,081	4,040	189	51	-	272	14,406	11
Emmet	22,668	6	119	-	2,636	589	25	53	-	103	11,797	31
Gladwin	20,825	-	-	-	344	18	-	-	-	57	15,531	52
Grand Traverse	18,081	-	-	-	7,091	1,281	54	-	-	178	3,194	25
Iosco	14,077	-	-	-	377	244	-	-	-	124	7,429	177
Isabella	17,163	-	-	-	-	65	-	-	-	4	10,315	-
Kalkaska	38,427	-	-	-	14,181	792	145	-	-	349	12,209	-
Lake	43,403	-	-	-	1,865	3,544	-	-	-	150	17,022	4
Leelanau	6,862	-	-	-	1,652	8	17	-	-	104	1,095	-
Manistee	47,467	-	-	-	135	671	-	-	-	979	18,158	-
Mason	26,870	-	-	-	-	-	-	-	-	89	15,005	5
Mecosta	34,026	-	-	-	13	-	-	-	-	469	21,305	-
Midland	18,266	-	-	-	35	-	-	-	-	148	10,415	21
Missaukee	44,404	-	-	-	3,012	650	9	-	-	477	23,920	20
Montmorency	54,474	-	30	-	2,995	430	25	-	-	789	29,135	1,644
Newaygo	30,397	-	-	-	-	-	-	-	-	281	16,125	1
Oceana	21,387	-	-	-	-	-	-	-	-	553	11,601	-
Ogemaw	30,809	1	7	-	4,734	51	20	2	-	188	17,223	267
Osceola	29,543	-	-	-	43	24	-	-	-	393	16,119	-
Oscoda	28,172	-	10	-	5,079	344	48	-	-	95	14,949	242
Otsego	37,641	15	400	-	4,364	704	42	208	-	105	20,499	43
Presque Isle	71,565	2	311	-	3,674	82	34	341	-	1,782	35,560	2,853
Roscommon	52,186	-	-	-	22,432	712	156	-	-	70	19,661	27
Wexford	23,143	-	-	-	1,599	1,513	4	-	-	722	7,521	70
Total	1,034,709	180	2,377	-	113,653	17,688	894	1,055	-	10,912	527,004	8,317
Southern Lower Peninsula												
Allegan	10,104	-	-	-	-	-	-	-	-	-	1,814	-
Barry	742	-	-	-	-	-	-	-	-	-	-	-
Calhoun	2,007	-	-	-	-	-	-	-	-	-	-	-
Cass	471	-	-	-	-	-	-	-	-	-	-	-
Clinton	597	-	-	-	-	-	-	-	-	104	-	-
Eaton	3,617	-	-	-	-	-	-	-	-	260	-	-
Gratiot	147	-	-	-	9	-	-	-	-	-	138	-
Jackson	13	-	-	13	-	-	-	-	-	-	-	-
Kalamazoo	2,329	-	-	-	-	-	-	-	-	-	-	-
Kent	9,233	-	-	-	-	-	-	-	-	4	3,672	-
Montcalm	14,311	-	-	-	-	17	-	-	-	365	4,278	-
Muskegon	14,165	-	-	-	-	-	-	-	-	233	5,710	-
Ottawa	3,183	-	-	-	-	-	-	-	-	-	274	-
Saginaw	18	-	-	-	-	-	-	-	-	-	-	-
Shiawassee	331	-	-	-	-	-	-	-	-	-	229	-
St Joseph	2,527	-	-	-	-	-	-	-	-	-	-	-
Van Buren	962	-	-	-	-	-	-	-	-	-	-	-
Total	64,755	-	-	13	9	17	-	-	-	967	16,116	-
State total	3,012,815	8,023	102,769	68,091	272,614	56,040	14,992	62,081	7,624	38,504	1,084,306	69,066

(Table 6 continued on next page.)

(Table 6 continued)

MICHIGAN

Forest Survey Unit and county[1]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Eastern Upper Peninsula												
Alger	2,002	3,787	6,541	2,386	-	2	-	36,684	22,201	1,362	-	2,206
Chippewa	600	1,132	4,850	477	-	-	-	10,250	10,730	241	-	439
Delta	2,052	2,785	9,018	14,443	-	11	-	12,083	15,790	757	19	1,786
Luce	821	1,340	3,431	651	-	-	-	16,849	9,110	763	-	497
Mackinac	683	1,203	10,188	1,120	-	-	-	12,088	10,049	266	-	882
Menominee	1,599	1,439	13,793	871	-	15	-	15,433	9,982	857	36	971
Schoolcraft	966	2,251	5,451	1,474	-	2	-	20,847	12,826	733	9	1,353
Total	8,724	13,937	53,271	21,422	-	30	-	124,233	90,689	4,980	65	8,133
Western Upper Peninsula												
Baraga	3,030	440	7,861	1,442	-	11	-	20,786	11,253	1,112	14	462
Dickinson	1,725	207	7,628	651	-	32	-	10,250	6,070	531	39	337
Gogebic	2,979	-	2,413	1,355	-	51	-	26,799	14,586	2,713	217	733
Houghton	4,949	574	12,192	2,498	-	16	-	35,925	18,505	2,327	39	967
Iron	5,037	576	9,690	1,946	-	42	-	31,081	17,959	2,181	109	1,074
Keweenaw	750	-	1,094	430	-	-	-	6,919	3,315	421	-	102
Marquette	4,283	6,003	25,828	4,085	-	38	-	54,512	34,840	1,897	107	3,757
Ontonagon	10,824	5	4,817	3,535	-	27	-	40,947	16,981	3,479	231	317
Total	33,576	7,805	71,524	15,942	-	216	-	227,219	123,511	14,661	755	7,750
Northern Lower Peninsula												
Alcona	897	90	2,388	-	-	-	-	488	3,751	6,830	759	1
Alpena	254	111	1,083	-	-	-	-	332	2,878	438	40	-
Antrim	161	64	332	-	-	-	-	2,391	1,012	145	5	-
Arenac	19	8	944	-	-	-	-	104	1,808	340	30	-
Bay	-	-	-	-	-	-	-	-	-	-	-	-
Benzie	1,545	986	1,539	5	-	-	-	3,797	3,080	651	113	591
Charlevoix	90	90	434	-	-	-	-	1,980	1,463	-	-	-
Cheboygan	923	160	2,686	-	-	-	-	1,921	5,756	1,280	5	-
Clare	42	41	2,192	-	-	-	-	923	7,607	1,277	314	39
Crawford	183	152	1,123	-	-	-	-	811	2,931	5,694	159	28
Emmet	226	124	1,194	-	-	-	-	2,634	3,127	2	-	2
Gladwin	58	6	1,036	-	-	-	-	277	2,683	638	126	-
Grand Traverse	777	363	364	-	-	-	-	2,149	2,203	201	100	100
Iosco	50	19	1,519	-	-	-	-	795	1,578	1,589	177	-
Isabella	523	1	1,084	-	208	104	-	8	1,145	3,136	569	-
Kalkaska	142	191	1,048	-	-	-	-	3,036	5,264	910	158	-
Lake	239	173	1,097	-	-	-	-	411	1,904	13,455	3,425	115
Leelanau	447	392	424	-	-	-	-	1,256	1,115	335	-	15
Manistee	502	928	2,043	-	-	-	-	2,914	8,810	10,102	1,603	622
Mason	297	331	1,424	-	-	-	-	642	3,002	4,993	1,005	77
Mecosta	494	596	1,089	-	417	-	-	1,718	2,462	4,187	1,196	81
Midland	84	43	1,708	-	1,042	-	-	153	3,421	943	254	-
Missaukee	1,869	650	2,178	-	-	-	-	2,373	5,318	2,646	1,079	205
Montmorency	3,140	117	2,879	-	-	-	-	2,952	6,322	3,660	355	-
Newaygo	243	558	485	-	104	104	-	1,178	3,165	5,148	2,983	21
Oceana	589	575	663	-	260	104	104	1,252	1,266	3,527	890	3
Ogemaw	216	70	1,873	-	-	-	-	744	3,198	2,061	147	8
Osceola	404	673	1,549	-	26	-	-	590	2,980	5,485	1,255	3
Oscoda	197	57	1,215	-	-	-	-	986	1,934	2,798	220	-
Otsego	581	192	1,018	-	-	-	-	4,434	4,870	168	-	-
Presque Isle	1,758	242	8,961	-	-	-	-	1,021	9,633	4,787	523	-
Roscommon	35	22	1,222	-	-	-	-	685	4,219	2,924	21	-
Wexford	922	825	785	-	-	-	-	4,158	3,572	849	311	292
Total	17,906	8,851	49,578	5	2,057	313	104	49,114	113,479	91,198	17,822	2,202
Southern Lower Peninsula												
Allegan	-	-	-	-	-	-	-	-	1,062	3,599	3,630	-
Barry	-	-	-	-	-	-	-	-	204	258	279	-
Calhoun	-	-	-	-	-	-	-	-	-	964	1,042	-
Cass	-	-	-	-	-	-	-	-	41	207	223	-
Clinton	-	104	-	-	-	-	53	-	-	156	179	-
Eaton	260	521	52	-	52	52	52	521	521	700	625	-
Gratiot	-	-	-	-	-	-	-	-	-	-	-	-
Jackson	-	-	-	-	-	-	-	-	-	-	-	-
Kalamazoo	-	-	-	-	-	-	-	-	-	1,119	1,210	-
Kent	2	1	3	-	-	-	-	470	1,227	2,042	1,809	2
Montcalm	521	104	575	-	-	-	-	-	1,352	3,453	3,647	-
Muskegon	5	213	223	-	-	-	-	556	607	3,421	3,186	9
Ottawa	-	-	-	-	-	-	-	-	490	1,242	1,177	-
Saginaw	-	-	-	-	-	-	-	-	18	-	-	-
Shiawassee	-	-	-	-	-	-	-	-	-	102	-	-
St Joseph	-	-	-	-	-	-	-	-	735	861	931	-
Van Buren	-	-	-	-	-	-	-	-	245	344	372	-
Total	789	943	853	-	52	52	105	1,547	6,502	18,468	18,312	11
State total	60,995	31,536	175,226	37,369	2,109	611	209	402,114	334,180	129,307	36,954	18,096

[1] *Includes only those counties that supplied pulpwood in 1994.*

Rows and columns may not sum due to rounding.

Table 7.--Pulpwood receipts in Michigan by species group, 1946-1994

(In thousand standard cords, unpeeled) 1/

	Roundwood									Residue	
Year	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	416	85	38	81	133	2	69	2/	8	--	--
1947	444	141	60	64	118	1	50	1	9	--	--
1948	485	132	76	46	132	1	78	--	19	--	1
1949	258	53	45	7	88	--	40	2/	25	--	--
1950	383	66	60	40	101	--	87	1	28	--	--
1951	582	134	81	100	108	--	126	2/	33	--	--
1952	449	80	68	60	116	--	102	1	22	--	--
1953	451	75	54	45	102	--	142	--	33	--	--
1954	412	37	53	2/	97	--	198	--	27	--	--
1955	455	20	53	2	102	--	240	--	38	--	--
1956	535	31	61	2/	92	--	323	--	28	--	--
1957	533	48	83	2	90	--	264	1	45	--	--
1958	549	107	70	2/	73	--	234	--	65	--	--
1959	699	116	70	1	94	--	336	--	81	--	1
1960	810	128	85	2	94	--	431	5	65	--	--
1961	700	109	68	2/	75	--	351	6	91	--	--
1962	679	97	35	--	29	--	387	14	117	--	--
1963	742	84	49	--	78	--	399	9	123	--	--
1964	791	107	40	2/	68	2/	429	18	127	--	2
1965	825	114	35	4	71	--	436	29	118	--	18
1966	1,004	143	44	5	78	--	526	8	159	--	41
1967	774	117	46	2	81	--	323	6	161	--	38
1968	774	133	35	3	61	--	328	11	147	--	56
1969	771	116	19	2	16	--	358	22	152	--	86
1970	805	152	26	3	22	--	332	28	154	11	77
1971	700	115	19	2	17	2/	298	22	165	1	61
1972	931	127	27	22	14	7	322	35	282	9	86
1973	1,199	135	37	36	14	4	404	64	351	12	142
1974	1,324	156	33	29	12	6	482	77	369	9	151
1975	844	167	18	23	7	4	288	33	171	8	125
1976	1,115	213	21	56	11	5	327	53	258	17	154
1977	1,233	208	51	62	25	10	370	48	269	17	173
1978	1,332	218	54	51	20	8	423	71	311	21	155
1979 3/	1,490	222	47	46	13	10	527	85	343	13	184
1980	1,493	202	51	52	28	12	525	73	393	11	146
1981	1,448	188	67	37	22	15	486	85	383	14	151
1982	1,387	216	69	52	44	19	493	73	305	11	105
1983	1,787	204	63	46	51	27	746	114	371	17	148
1984	2,000	234	46	46	37	22	833	103	494	14	171
1985	2,264	264	64	34	57	52	819	103	686	20	165
1986	2,630	268	80	40	71	55	811	272	822	54	157
1987	2,610	239	89	35	68	67	783	276	809	73	171
1988	2,925	231	108	33	61	35	947	323	936	63	188
1989	3,073	179	129	40	76	43	1,073	362	908	68	195
1990	2,913	230	79	43	13	12	1,068	304	879	76	209
1991	2,979	247	94	47	15	15	1,026	262	994	80	198
1992	2,801	288	69	35	14	12	957	244	920	81	181
1993	3,145	295	86	35	20	12	1,109	267	1,048	83	190
1994	3,254	245	79	67	18	15	1,084	271	1,204	93	178

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard.

Rows and columns may not sum due to rounding.

Table 8.--Pulpwood receipts in Michigan by area of origin, 1946-1994

(In thousand standard cords, unpeeled) 1/

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	Canada
1946	416	259	--	12	--	145
1947	444	239	42	21	--	142
1948	485	271	--	22	1	191
1949	258	130	--	3	*2/*	125
1950	383	258	--	3	--	122
1951	582	398	4	9	1	170
1952	449	290	5	1	2	151
1953	451	319	11	11	*2/*	110
1954	412	309	*2/*	4	*2/*	99
1955	455	356	--	5	--	94
1956	535	437	--	7	--	91
1957	533	427	--	9	--	97
1958	549	458	--	7	--	84
1959	699	603	3	7	--	86
1960	810	727	*2/*	*2/*	--	83
1961	700	628	1	--	--	71
1962	679	677	1	1	--	--
1963	742	669	2	--	--	71
1964	791	730	2	--	--	59
1965	825	750	1	--	--	74
1966	1,004	902	3	*2/*	2	97
1967	774	685	2/	*2/*	4	85
1968	774	702	4	*2/*	7	61
1969	771	751	9	--	9	2
1970	805	784	10	*2/*	10	1
1971	700	689	*2/*	*2/*	11	*2/*
1972	931	917	3	*2/*	11	--
1973	1,199	1,131	55	*2/*	13	--
1974	1,324	1,290	25	*2/*	9	--
1975	844	815	19	--	10	--
1976	1,115	1,081	24	--	7	3
1977	1,233	1,159	65	--	9	--
1978	1,332	1,248	70	--	10	4
1979 3/	1,490	1,428	46	--	14	2
1980	1,493	1,443	35	--	12	3
1981	1,448	1,402	26	--	16	4
1982	1,387	1,340	28	--	16	3
1983	1,787	1,747	23	--	17	--
1984	2,000	1,934	45	--	18	3
1985	2,058	1,973	64	--	17	4
1986	2,631	2,429	177	*2/*	16	9
1987	2,611	2,420	161	--	19	11
1988	2,855	2,597	233	2	22	1
1989	3,073	2,777	272	2	22	--
1990	2,913	2,645	243	1	21	3
1991	2,979	2,687	274	--	15	2
1992	2,801	2,532	253	--	16	--
1993	3,146	2,859	244	--	15	28
1994	3,255	2,915	241	11	16	72

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

Table 9.--Pulpwood receipts in Michigan by species group and area of origin, 1994

(In thousand standard cords, unpeeled) 1/

Type of material and species group	Total receipts	Origin of material				
		Michigan	Minnesota	Wisconsin	Other U.S.	Canada
ROUNDWOOD						
SOFTWOODS						
N. white-cedar	8	8	--	*	--	--
Balsam fir	79	77	--	2	--	--
Hemlock	67	65	--	2	--	--
Jack pine	187	185	--	2	--	--
Red pine	44	43	--	1	--	--
White pine	14	14	--	*	--	--
Spruce	18	18	--	*	--	--
Tamarack	7	7	--	*	--	--
Total	424	417	--	7	--	--
HARDWOODS						
Ash	40	36	*	4	--	*
Aspen	1,084	977	--	57	--	50
Balsam poplar	74	69	--	5	--	*
Basswood	65	59	*	6	--	*
Beech	32	32	--	*	--	*
White birch	231	169	10	50	--	2
Yellow birch	40	37	*	3	--	*
Cottonwood	2	2	--	--	--	--
Elm	*	*	--	*	--	--
Hickory	*	*	--	--	--	--
Hard maple	448	393	1	51	--	3
Soft maple	358	327	1	27	--	3
Red oak	129	126	*	3	--	*
White oak	36	36	--	--	--	--
Other hardwoods	18	17	*	1	--	*
Total	2,557	2,280	12	207	--	58
All species	2,981	2,697	12	214	--	58
RESIDUES 2/						
Softwood	93	69	--	10	--	14
Hardwood	179	147	--	16	16	--
Total	272	216	--	26	16	14
ALL MATERIAL	3,253	2,913	12	240	16	72

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

* *Less than 500 cords*

Table 10.--Saw-log production and receipts in Michigan by species group, 1992 and 1994

(In thousand board feet) 1/

Species group	Production			Receipts		
	1992	1994	Change	1992	1994	Change
SOFTWOODS						
N. white-cedar	10,932	13,601	2,669	11,015	13,592	2,577
Balsam fir	1,195	553	-642	1,165	415	-750
Hemlock	2,888	4,594	1,706	2,427	4,315	1,888
Jack pine	14,381	11,684	-2,697	9,439	6,389	-3,050
Red pine	91,282	93,261	1,979	89,731	88,334	-1,397
White pine	18,045	14,019	-4,026	16,609	11,563	-5,046
Redcedar	--	162	162	--	162	162
Spruce	1,520	5,062	3,542	1,404	4,191	2,787
Tamarack	22	52	30	6	21	15
Total	140,265	142,988	2,723	131,796	128,982	-2,814
HARDWOODS						
Ash	18,498	25,689	7,191	16,922	23,521	6,599
Aspen	118,592	106,067	-12,525	113,341	97,434	-15,907
Balsam poplar	990	152	-838	990	135	-855
Basswood	26,172	28,924	2,752	22,802	23,762	960
Beech	11,291	11,501	210	11,646	10,837	-809
White birch	9,199	9,852	653	4,482	6,802	2,320
Yellow birch	8,289	9,642	1,353	7,003	8,489	1,486
Cottonwood	3,324	3,212	-112	3,043	2,931	-112
Elm	740	796	56	419	467	48
Hickory	1,115	2,337	1,222	102	1,347	1,245
Hard maple	102,495	107,324	4,829	92,106	97,877	5,771
Soft maple	54,220	67,946	13,726	50,234	64,564	14,330
Red oak group	104,825	106,183	1,358	100,683	102,066	1,383
White oak group	18,831	21,377	2,546	16,840	19,023	2,183
Hackberry	2,008	610	-1,398	2,008	610	-1,398
Butternut	203	--	-203	9	--	-9
Yellow-poplar	1,862	1,735	-127	452	353	-99
Sycamore	852	832	-20	47	27	-20
Black cherry	6,141	9,357	3,216	5,021	8,265	3,244
Sassafras	12	--	-12	12	--	-12
Willow	--	184	184	--	184	184
Black walnut	2,297	1,397	-900	1,484	633	-851
Other hardwoods	157	157	0	--	--	0
Total	492,113	515,274	23,161	449,646	469,327	19,681
All species	632,378	658,262	25,884	581,442	598,309	16,867

1/ International 1/4-inch rule.

Table 11.--Saw-log production by Forest Survey Unit, species group, and State of destination, Michigan, 1994

(In thousand board feet) 1/

Species	ALL UNITS						
	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
SOFTWOODS							
Balsam fir	553	--	390	--	163	--	--
Redcedar	162	--	162	--	--	--	--
Tamarack	52	--	21	--	32	--	--
Spruce	5,062	--	4,162	16	884	--	--
Jack pine	11,684	--	6,389	--	1,773	--	3,521
Red pine	93,261	--	88,334	105	4,823	--	--
White pine	14,019	20	11,513	144	2,342	--	--
N. white-cedar	13,601	--	13,587	--	14	--	--
Hemlock	4,594	--	4,313	--	282	--	--
Total	142,988	20	128,869	265	10,314	--	3,521
HARDWOODS							
Soft maple	67,946	2,116	63,203	--	2,603	15	8
Hard maple	107,324	2,621	95,207	--	9,458	29	7
White birch	9,852	77	5,569	--	2,464	--	1,742
Yellow birch	9,642	--	8,143	--	963	--	536
Hickory	2,337	1,012	1,325	--	--	--	--
Hackberry	610	--	610	--	--	--	--
Beech	11,501	664	10,796	--	27	7	8
Ash	25,689	1,953	23,142	--	552	43	--
Black walnut	1,397	806	585	--	--	7	--
Yellow-poplar	1,735	1,403	319	--	--	14	--
Sycamore	832	798	27	--	--	7	--
Cottonwood	3,212	265	2,931	--	8	8	--
Balsam poplar	152	--	135	--	17	--	--
Aspen	106,067	--	95,651	108	10,308	--	--
Black cherry	9,357	1,113	8,111	--	126	7	--
Red oak group	106,183	6,793	97,261	--	1,186	100	843
White oak group	21,377	2,409	18,471	--	126	146	225
Willow	184	--	184	--	--	--	--
Basswood	28,924	888	23,405	--	4,627	--	4
Elm	.796	308	459	--	29	--	--
Other hardwoods	157	145	--	--	--	--	12
Total	515,273	23,371	455,531	108	32,494	383	3,386
All species	658,261	23,391	584,400	373	42,807	383	6,908

(Table 11 continued on next page)

(Table 11 continued)

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Eastern Upper Peninsula							
SOFTWOODS							
Balsam fir	209	--	209	--	--	--	--
Spruce	2,134	--	2,102	--	33	--	--
Jack pine	211	--	211	--	--	--	--
Red pine	5,468	--	3,688	--	1,780	--	--
White pine	2,124	--	1,901	--	223	--	--
N. white-cedar	8,672	--	8,672	--	--	--	--
Hemlock	121	--	121	--	--	--	--
Total	18,939	--	16,904	--	2,035	--	--
HARDWOODS							
Soft maple	8,407	--	8,284	--	121	--	2
Hard maple	13,848	--	13,619	--	227	--	3
White birch	3,827	--	1,577	--	700	--	1,550
Yellow birch	1,766	--	1,176	--	57	--	533
Beech	5,249	--	5,231	--	10	--	7
Ash	768	--	761	--	7	--	--
Balsam poplar	37	--	37	--	--	--	--
Aspen	10,895	--	10,482	--	414	--	--
Black cherry	601	--	568	--	32	--	--
Red oak group	813	--	698	--	115	--	--
Basswood	4,094	--	4,063	--	30	--	*
Elm	163	--	163	--	--	--	--
Total	50,467	--	46,660	--	1,713	--	2,094
All species	69,406	--	63,564	--	3,748	--	2,094
Northern Lower Peninsula							
SOFTWOODS							
Balsam fir	68	--	68	--	--	--	--
Tamarack	13	--	13	--	--	--	--
Spruce	56	--	56	--	--	--	--
Jack pine	9,676	--	6,154	--	--	--	3,521
Red pine	75,968	--	75,968	--	--	--	--
White pine	6,886	--	6,886	--	--	--	--
N. white-cedar	2,948	--	2,948	--	--	--	--
Hemlock	317	--	317	--	--	--	--
Total	95,931	--	92,409	--	--	--	3,521
HARDWOODS							
Soft maple	30,914	--	30,907	--	*	--	7
Hard maple	39,861	--	39,849	--	7	--	4
White birch	2,550	--	2,357	--	*	--	193
Yellow birch	323	--	320	--	*	--	3
Hickory	34	--	34	--	--	--	--
Beech	4,037	--	4,033	--	2	--	1
Ash	11,351	--	11,350	--	2	--	--
Black walnut	13	--	13	--	--	--	--
Cottonwood	974	--	974	--	--	--	--
Balsam poplar	96	--	96	--	--	--	--
Aspen	70,276	--	70,276	--	--	--	--
Black cherry	2,092	--	2,092	--	--	--	--
Red oak group	68,035	--	67,294	--	--	--	741
White oak group	8,976	--	8,799	--	--	--	177
Willow	108	--	108	--	--	--	--
Basswood	14,106	--	14,096	--	6	--	4
Elm	150	--	149	--	1	--	--
Other hardwoods	3	--	--	--	--	--	3
Total	253,899	--	252,747	--	18	--	1,133
All species	349,829	--	345,156	--	18	--	4,655

(Table 11 continued on next page)

(Table 11 continued)

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Southern Lower Peninsula							
SOFTWOODS							
Redcedar	162	--	162	--	--	--	--
Red pine	7,697	--	7,697	--	--	--	--
White pine	229	20	209	--	--	--	--
Hemlock	17	--	17	--	--	--	--
Total	8,105	20	8,085	--	--	--	--
HARDWOODS							
Soft maple	13,789	2,116	11,658	--	--	15	--
Hard maple	9,385	2,621	6,718	--	17	29	--
White birch	165	77	87	--	--	--	--
Yellow birch	39	--	39	--	--	--	--
Hickory	2,303	1,012	1,290	--	--	--	--
Hackberry	610	--	610	--	--	--	--
Beech	1,665	664	994	--	--	7	--
Ash	11,482	1,953	9,483	--	4	43	--
Black walnut	1,385	806	572	--	--	7	--
Yellow-poplar	1,735	1,403	319	--	--	14	--
Sycamore	832	798	27	--	--	7	--
Cottonwood	2,239	265	1,958	--	8	8	--
Aspen	2,750	--	2,745	--	5	--	--
Black cherry	5,296	1,113	4,175	--	1	7	--
Red oak group	33,728	6,793	26,678	--	55	100	102
White oak group	12,297	2,409	9,671	--	23	146	48
Willow	76	--	76	--	--	--	--
Basswood	2,941	888	2,032	--	21	--	--
Elm	410	308	99	--	3	--	--
Other hardwoods	154	145	--	--	--	--	9
Total	103,280	23,371	79,231	--	137	383	159
All species	111,385	23,391	87,315	--	137	383	159
Western Upper Peninsula							
SOFTWOODS							
Balsam fir	277	--	113	--	163	--	--
Tamarack	40	--	8	--	32	--	--
Spruce	2,871	--	2,004	16	852	--	--
Jack pine	1,797	--	24	--	1,773	--	--
Red pine	4,128	--	980	105	3,043	--	--
White pine	4,780	--	2,517	144	2,119	--	--
N. white-cedar	1,980	--	1,966	--	14	--	--
Hemlock	4,140	--	3,858	--	282	--	--
Total	20,014	--	11,470	265	8,279	--	--
HARDWOODS							
Soft maple	14,836	--	12,354	--	2,482	--	--
Hard maple	44,229	--	35,022	--	9,207	--	--
White birch	3,310	--	1,547	--	1,763	--	--
Yellow birch	7,514	--	6,608	--	906	--	--
Beech	551	--	537	--	15	--	--
Ash	2,087	--	1,548	--	539	--	--
Balsam poplar	20	--	3	--	17	--	--
Aspen	22,146	--	12,148	108	9,890	--	--
Black cherry	1,369	--	1,276	--	93	--	--
Red oak group	3,607	--	2,591	--	1,016	--	--
White oak group	104	--	--	--	104	--	--
Basswood	7,783	--	3,213	--	4,570	--	--
Elm	72	--	47	--	25	--	--
Total	107,628	--	76,894	108	30,626	--	--
All species	127,641	--	88,364	373	38,905	--	--

**=Less than 500 board feet.*

1/ International 1/4-inch rule.

Table 12.--Saw-log production by Forest Survey Unit, county, and species group, Michigan, 1994

(In thousand board feet) 1/

Unit and county	Balsam Fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hem-lock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
Eastern Upper Peninsula																
Alger	31	--	--	79	150	575	308	97	87	1,326	2,797	4,188	818	674	--	--
Chippewa	--	--	--	151	35	1,590	110	292	--	2,178	799	1,519	276	123	--	--
Delta	86	--	--	441	--	1,961	431	3,885	21	6,825	1,356	1,448	704	498	--	--
Luce	32	--	--	72	11	311	359	115	--	899	1,652	2,776	183	70	--	--
Mackinac	--	--	--	78	5	334	74	118	--	609	427	1,590	550	111	--	--
Menominee	30	--	--	1,243	--	519	692	3,836	13	6,333	581	1,481	847	144	--	--
Schoolcraft	30	--	--	70	12	179	151	329	--	770	795	848	449	146	--	--
Total	209	--	--	2,134	211	5,468	2,124	8,672	121	18,939	8,407	13,848	3,827	1,766	--	--
Western Upper Peninsula																
Baraga	--	--	--	1,557	329	103	210	156	1,742	4,096	2,168	5,579	210	1,355	--	--
Dickinson	69	--	25	59	113	229	361	456	7	1,318	312	1,146	300	113	--	--
Gogebic	93	--	7	547	98	1,104	911	2	340	3,103	2,208	10,705	441	1,592	--	--
Houghton	1	--	--	74	134	312	368	116	1,737	2,743	2,736	6,883	357	1,330	--	--
Iron	44	--	5	339	39	506	1,250	40	79	2,303	1,555	6,455	951	924	--	--
Keweenaw	15	--	--	17	13	357	241	223	1	867	596	1,274	128	252	--	--
Marquette	55	--	--	166	964	504	1,139	886	64	3,777	3,093	5,152	666	782	--	--
Ontonagon	--	--	2	113	107	1,012	299	103	170	1,807	2,169	7,035	257	1,167	--	--
Total	277	--	40	2,871	1,797	4,128	4,780	1,980	4,140	20,014	14,836	44,229	3,310	7,514	--	--
Northern Lower Peninsula																
Alcona	2	--	--	3	367	2,875	731	8	--	3,985	993	254	188	--	--	--
Alpena	5	--	--	4	99	626	332	1,840	--	2,905	1,278	88	194	--	--	--
Antrim	--	--	--	--	1	774	33	11	39	858	493	3,348	30	25	--	--
Arenac	--	--	--	--	12	33	16	--	--	61	531	17	25	--	--	--
Bay	--	--	--	--	--	--	--	--	--	--	65	--	--	--	--	--
Benzie	--	--	--	--	--	2,309	11	--	11	2,331	425	2,818	6	6	--	--
Charlevoix	--	--	--	--	--	989	134	208	29	1,359	513	3,501	467	177	--	--
Cheboygan	14	--	--	15	330	2,896	341	99	1	3,695	1,282	3,447	178	--	--	--
Clare	--	--	--	--	29	1,128	60	11	--	1,228	2,010	125	33	--	1	--
Crawford	--	--	--	--	2,035	3,547	579	11	3	6,175	382	410	16	--	--	--
Emmet	6	--	--	2	--	853	36	44	9	948	565	2,837	39	29	--	--
Gladwin	--	--	--	--	6	310	131	2	--	448	1,013	1	78	--	1	--
Grand Traverse	--	--	--	--	14	3,787	55	--	13	3,869	535	1,442	21	2	--	--
Iosco	--	--	--	--	172	3,440	406	10	10	4,038	688	28	44	1	--	--
Isabella	--	--	--	--	--	33	5	--	6	44	782	279	35	--	--	--
Kalkaska	--	--	--	--	201	8,371	184	1	11	8,768	586	2,037	43	9	--	--
Lake	--	--	--	--	598	5,048	156	--	26	5,828	1,014	248	2	1	--	--
Leelanau	--	--	--	--	--	455	46	21	7	529	98	2,236	12	4	--	--
Manistee	--	--	--	--	13	2,620	100	--	10	2,742	1,492	2,978	13	1	--	--
Mason	--	--	--	--	12	1,260	53	--	4	1,329	1,179	392	8	2	--	--
Mecosta	--	--	--	--	4	1,529	109	--	12	1,654	1,052	813	57	15	3	--
Midland	--	--	--	--	--	168	60	--	--	228	1,144	16	70	4	1	--
Missaukee	--	--	10	--	9	2,067	177	52	6	2,320	839	637	21	--	--	--
Montmorency	--	--	--	10	949	3,412	478	29	--	4,878	1,519	917	185	1	--	--
Newaygo	--	--	--	--	--	6,162	237	--	22	6,421	2,693	842	1	3	9	--

Northern Lower Peninsula(continued on next page)

(Table 12 continued on next page)

(Table 12 continued)

Unit and county	Balsam Fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hem-lock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
Northern Lower Peninsula (continued)																
Oceana	--	--	--	--	--	1,003	140	--	50	1,193	1,298	685	2	3	19	--
Ogemaw	--	--	--	--	663	1,331	317	19	--	2,330	1,080	532	114	3	--	--
Osceola	--	--	--	--	39	752	34	--	4	829	996	1,309	16	--	--	--
Oscoda	--	--	--	--	2,852	5,319	1,161	--	22	9,354	768	527	152	10	--	--
Otsego	--	--	--	--	416	3,285	305	2	11	4,020	595	3,671	89	17	--	--
Presque Isle	42	--	3	24	371	1,434	128	533	--	2,535	981	925	294	--	--	--
Roscommon	--	--	--	--	404	1,963	309	48	1	2,725	1,322	102	113	4	--	--
Wexford	--	--	--	--	82	6,191	23	--	8	6,304	703	2,397	6	4	--	--
Total	68	--	13	56	9,676	75,968	6,886	2,948	317	95,931	30,914	39,861	2,550	323	34	--
Southern Lower Peninsula																
Allegan	--	--	--	--	--	5,399	10	--	--	5,409	593	120	--	--	61	14
Barry	--	--	--	--	--	127	4	--	--	131	690	1,521	--	--	130	49
Berrien	--	--	--	--	--	--	--	--	--	--	114	453	3	--	21	7
Branch	--	--	--	--	--	--	--	--	--	--	651	78	--	--	13	10
Calhoun	--	--	--	--	--	--	--	--	--	--	702	135	--	--	242	36
Cass	--	--	--	--	--	--	--	--	--	--	322	112	--	--	89	15
Clinton	--	--	--	--	--	--	--	--	--	--	1,377	14	--	--	149	14
Eaton	--	--	--	--	--	3	--	--	--	3	537	1,134	33	--	221	24
Genesee	--	--	--	--	--	--	--	--	--	--	70	137	--	--	3	5
Gratiot	--	--	--	--	--	--	3	--	--	3	494	55	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	67	528	--	--	12	4
Huron	--	--	--	--	--	--	--	--	--	--	101	5	27	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	502	331	--	--	69	15
Ionia	--	--	--	--	--	96	--	--	--	96	191	283	--	--	73	1
Jackson	--	162	--	--	--	1	1	--	--	164	171	10	--	--	251	71
Kalamazoo	--	--	--	--	--	50	*	--	--	50	322	70	--	--	48	11
Kent	--	--	--	--	--	258	10	--	--	268	1,264	1,257	--	1	37	11
Lapeer	--	--	--	--	--	78	3	--	--	80	572	401	6	28	5	16
Lenawee	--	--	--	--	--	--	--	--	--	--	34	563	--	--	122	36
Livingston	--	--	--	--	--	20	--	--	--	20	126	8	--	--	12	28
Macomb	--	--	--	--	--	--	--	--	--	--	54	95	--	--	--	29
Monroe	--	--	--	--	--	--	--	--	--	--	35	21	--	--	81	27
Montcalm	--	--	--	--	--	809	95	--	4	908	1,338	178	26	4	13	5
Muskegon	--	--	--	--	--	295	82	--	8	385	1,060	21	2	4	2	1
Oakland	--	--	--	--	--	2	*	--	--	2	95	147	--	--	11	29
Ottawa	--	--	--	--	--	479	7	--	5	492	361	110	--	2	8	2
Saginaw	--	--	--	--	--	2	9	--	--	11	435	137	8	--	61	9
Sanilac	--	--	--	--	--	--	1	--	--	1	65	--	11	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	255	237	--	--	29	16
St. Clair	--	--	--	--	--	1	2	--	--	3	311	410	--	--	4	10
St. Joseph	--	--	--	--	--	--	--	--	--	--	180	98	--	--	247	43
Tuscola	--	--	--	--	--	--	--	--	--	--	190	106	48	--	--	2
Van Buren	--	--	--	--	--	--	--	--	--	--	377	596	--	--	103	23
Washtenaw	--	--	--	--	--	78	--	--	--	78	92	10	--	--	183	42
Wayne	--	--	--	--	--	--	--	--	--	--	43	5	--	--	3	5
Total	--	162	--	--	--	7,697	229	--	17	8,105	13,789	9,385	165	39	2,303	610
State total	553	162	52	5,062	11,684	93,261	14,019	13,601	4,594	142,988	67,946	107,324	9,852	9,642	2,337	610

(Table 12 continued on next page)

(Table 12 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Eastern Upper Peninsula																	
Alger	2,627	167	--	--	--	--	--	473	307	59	--	--	986	--	--	13,097	14,423
Chippewa	256	27	--	--	--	--	--	1,059	3	10	--	--	552	--	--	4,624	6,802
Delta	254	130	--	--	--	--	1	2,988	80	164	--	--	126	6	--	7,754	14,578
Luce	1,496	16	--	--	--	--	--	178	116	1	--	--	270	--	--	6,756	7,655
Mackinac	196	174	--	--	--	--	--	526	80	4	--	--	1,442	--	--	5,100	5,708
Menominee	38	196	--	--	--	--	36	5,348	--	570	--	--	296	157	--	9,694	16,027
Schoolcraft	382	58	--	--	--	--	--	324	15	5	--	--	421	--	--	3,443	4,213
Total	5,249	768	--	--	--	--	37	10,895	601	813	--	--	4,094	163	--	50,467	69,406
Baraga	--	208	--	--	--	--	--	585	268	128	5	--	364	--	--	10,870	14,967
Dickinson	6	79	--	--	--	--	--	2,519	1	91	11	--	402	23	--	5,003	6,321
Gogebic	--	850	--	--	--	--	--	7,656	368	654	10	--	2,210	7	--	26,701	29,804
Houghton	--	128	--	--	--	--	--	1,730	87	645	30	--	615	2	--	14,544	17,286
Iron	5	157	--	--	--	--	17	3,792	359	414	10	--	1,480	14	--	16,133	18,436
Keweenaw	--	45	--	--	--	--	--	320	1	586	14	--	60	--	--	3,276	4,143
Marquette	540	103	--	--	--	--	3	1,984	165	619	17	--	537	21	--	13,681	17,458
Ontonagon	--	518	--	--	--	--	--	3,560	119	469	7	--	2,116	5	--	17,421	19,227
Total	551	2,087	--	--	--	--	20	22,146	1,369	3,607	104	--	7,783	72	--	107,628	127,641
Northern Lower Peninsula																	
Alcona	57	275	--	--	--	--	--	4,208	33	6,095	300	--	129	--	--	12,533	16,519
Alpena	1	277	--	--	--	--	--	3,881	1	888	19	--	171	--	--	6,797	9,702
Antrim	228	524	1	--	--	--	--	1,440	60	74	--	--	2,208	23	--	8,454	9,311
Arenac	1	250	--	--	--	19	--	1,145	3	554	22	--	11	--	--	2,578	2,638
Bay	--	45	--	--	--	9	--	33	1	--	9	--	4	--	--	166	166
Benzie	129	310	--	--	--	--	--	246	149	52	1	--	554	2	--	4,699	7,030
Charlevoix	530	869	--	--	--	166	--	1,389	41	472	83	--	1,669	17	--	9,894	11,254
Cheboygan	470	1,137	--	--	--	193	--	5,545	21	1,262	162	--	1,658	--	--	15,356	19,051
Clare	51	152	--	--	--	--	--	4,638	57	3,202	454	--	17	6	--	10,745	11,973
Crawford	48	11	--	--	--	--	--	1,218	20	3,381	218	--	229	--	--	5,933	12,109
Emmet	546	801	--	--	--	110	--	1,376	66	438	83	--	1,040	4	--	7,934	8,882
Gladwin	--	246	--	--	--	12	50	4,102	7	1,655	150	--	24	7	--	7,346	7,794
Grand Traverse	36	108	--	--	--	--	--	578	46	875	239	--	234	--	--	4,116	7,985
Iosco	--	281	--	--	--	15	1	1,464	13	1,110	111	--	19	--	--	3,774	7,811
Isabella	12	275	1	--	--	14	--	1,646	13	1,422	217	3	32	4	--	4,735	4,780
Kalkaska	99	83	--	--	--	--	--	465	69	583	22	--	484	--	--	4,481	13,249
Lake	42	229	--	--	--	--	--	1,277	105	5,617	1,476	1	71	--	--	10,084	15,912
Leelanau	78	805	--	--	--	--	--	106	7	186	--	--	374	--	--	3,906	4,435
Manistee	336	197	--	--	--	--	--	807	306	2,864	475	--	135	--	--	9,604	12,346
Mason	55	157	--	--	--	--	--	1,083	103	2,471	664	8	35	--	--	6,158	7,487
Mecosta	24	636	1	--	--	--	--	2,439	123	814	184	10	173	11	--	6,356	8,010
Midland	45	270	--	--	--	201	40	2,517	5	925	625	--	64	16	--	5,945	6,173
Missaukee	45	221	--	--	--	--	--	888	42	757	93	--	77	--	--	3,619	5,939
Montmorency	32	245	--	--	--	--	2	4,422	8	4,082	56	--	548	1	--	12,017	16,896
Newaygo	136	415	9	--	--	--	--	979	220	6,390	1,653	47	229	3	1	13,629	20,050

Northern Lower Peninsula(continued on next page)

(Table 12 continued on next page)

(Table 12 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Sycamore	Cottonwood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
Oceana	154	280	--	--	--	14	--	755	166	2,704	588	36	55	3	1	6,763	7,956
Ogemaw	126	175	--	--	--	--	--	4,876	6	3,922	101	--	496	--	--	11,430	13,760
Osceola	60	446	--	--	--	--	--	2,478	97	1,887	27	3	363	--	--	7,681	8,510
Oscoda	30	142	--	--	--	--	--	2,705	51	4,288	242	--	145	41	--	9,101	18,455
Otsego	266	373	--	--	--	97	--	3,039	18	872	76	--	2,243	11	--	11,368	15,388
Presque Isle	209	675	--	--	--	124	3	3,760	--	1,525	93	--	291	--	--	8,879	11,414
Roscommon	12	211	--	--	--	--	--	3,960	12	5,057	486	--	35	--	--	11,315	14,040
Wexford	180	230	--	--	--	--	--	809	223	1,610	50	--	289	1	1	6,502	12,806
Total	4,037	11,351	13	--	--	974	96	70,276	2,092	68,035	8,976	108	14,106	150	3	253,899	349,829
Southern Lower Peninsula																	
Allegan	126	528	7	1,121	--	1	--	53	266	2,169	1,164	--	51	--	18	6,291	11,700
Barry	130	290	14	2	--	1	--	45	534	3,079	414	--	209	7	25	7,140	7,272
Berrien	56	100	3	437.	805	14	--	11	320	245	161	--	30	64	20	2,866	2,866
Branch	--	415	20	6	3	8	--	6	53	118	141	--	42	11	--	1,575	1,575
Calhoun	27	903	1	12	2	4	--	13	604	807	368	--	416	29	15	4,315	4,315
Cass	13	283	165	29	--	--	--	14	431	625	108	--	40	88	21	2,354	2,354
Clinton	--	261	58	--	--	11	--	4	440	391	179	1	124	4	--	3,027	3,027
Eaton	153	1,236	73	--	--	84	--	40	79	492	259	--	245	36	--	4,646	4,649
Genesee	13	143	6	--	--	49	--	6	17	267	122	--	73	3	--	914	914
Gratiot	--	246	--	--	--	162	--	34	3	1,028	315	1	107	--	--	2,445	2,448
Hillsdale	--	147	48	--	1	1	--	--	71	176	33	--	24	--	--	1,113	1,113
Huron	--	250	--	--	--	620	--	307	11	32	--	--	20	--	--	1,374	1,374
Ingham	42	425	1	--	2	64	--	10	80	209	102	--	126	16	--	1,992	1,992
Ionia	222	207	18	--	--	13	--	119	179	630	60	4	195	4	--	2,199	2,295
Jackson	--	258	128	--	2	1	--	8	322	1,792	705	--	92	4	16	3,832	3,996
Kalamazoo	2	182	8	68	--	4	--	38	197	446	82	--	29	--	7	1,514	1,564
Kent	31	394	53	14	--	--	--	173	173	2,699	798	19	158	--	7	7,089	7,357
Lapeer	57	230	--	--	--	157	--	383	23	1,079	368	--	27	1	--	3,354	3,434
Lenawee	82	73	53	--	2	--	--	1	26	115	63	--	191	--	--	1,361	1,361
Livingston	--	171	--	--	3	19	--	1	173	1,246	506	--	4	--	--	2,297	2,317
Macomb	8	70	--	--	--	42	--	50	7	203	319	--	8	--	--	883	883
Monroe	--	72	60	--	2	10	--	--	20	166	122	--	14	--	--	629	629
Montcalm	109	969	8	--	--	--	--	260	80	3,187	1,626	37	69	63	--	7,972	8,880
Muskegon	196	121	--	--	--	--	--	191	49	4,210	1,007	12	2	--	--	6,880	7,265
Oakland	5	220	4	--	2	25	--	1	101	541	164	--	32	--	--	1,377	1,379
Ottawa	193	159	--	8	--	3	--	47	19	980	214	--	18	--	--	2,124	2,616
Saginaw	--	490	--	--	--	95	--	31	5	437	640	--	6	--	--	2,355	2,366
Sanilac	1	313	--	--	--	33	--	109	21	112	1	--	30	--	--	696	697
Shiawassee	24	502	10	--	--	73	--	2	93	475	174	--	119	--	--	2,010	2,010
St Clair	64	463	--	--	--	398	--	1	71	1,552	656	--	64	--	--	4,003	4,006
St Joseph	--	357	402	27	3	2	--	60	210	1,255	66	--	50	13	7	3,019	3,019
Tuscola	30	394	2	--	--	304	--	703	56	137	62	--	180	28	--	2,242	2,242
Van Buren	64	429	6	11	--	--	--	26	471	1,992	220	--	65	26	18	4,428	4,428
Washtenaw	8	131	236	--	4	15	--	--	93	598	951	--	11	--	--	2,373	2,450
Wayne	8	49	--	--	1	23	--	--	--	241	127	--	71	14	--	589	589
Total	1,665	11,482	1,385	1,735	832	2,239	--	2,750	5,296	33,728	12,297	76	2,941	410	154	103,280	111,385
State total	11,501	25,689	1,397	1,735	832	3,212	152	106,067	9.357	106,183	21,377	184	28,924	796	157	515,273	658,261

** = Less than 500 board feet.*

1/ International 1/4-inch rule.

Table 13.--Saw-log receipts by Forest Survey Unit, species group, and State of origin, Michigan, 1994

(In thousand board feet)

Species	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
SOFTWOODS						
Balsam fir	415	--	390	--	--	25
Redcedar	162	--	162	--	--	--
Tamarack	21	--	21	--	--	--
Spruce	4,191	--	4,162	4	--	25
Jack pine	6,389	--	6,389	--	--	--
Red pine	88,334	--	88,334	--	--	--
White pine	11,563	--	11,513	--	--	50
N. white-cedar	13,592	--	13,587	5	--	--
Hemlock	4,315	--	4,313	2	--	--
Total	128,980	--	128,869	11	--	100
HARDWOODS						
Soft maple	64,564	149	63,203	985	137	90
Hard maple	97,877	111	95,207	2,272	108	180
White birch	6,802	--	5,569	1,231	--	3
Yellow birch	8,489	--	8,143	327	--	18
Hickory	1,347	11	1,325	--	11	--
Hackberry	610	--	610	--	--	--
Beech	10,837	2	10,796	34	--	5
Ash	23,521	84	23,142	195	77	23
Black walnut	633	25	585	--	23	--
Yellow-poplar	353	18	319	--	17	--
Sycamore	27	--	27	--	--	--
Cottonwood	2,931	--	2,931	--	--	--
Balsam poplar	135	--	135	--	--	--
Aspen	97,434	--	95,651	1,717	--	66
Black cherry	8,265	36	8,111	81	36	1
Red oak group	102,066	728	97,261	3,483	587	7
White oak group	19,023	276	18,471	--	276	--
Willow	184	--	184	--	--	--
Basswood	23,762	20	23,405	295	17	25
Elm	467	--	459	9	--	--
Total	469,324	1,459	455,531	10,628	1,288	419
All species	598,304	1,459	584,400	10,639	1,288	519

(Table 13 continued on next page)

(Table 13 continued)

Species	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
Eastern Upper Peninsula						
SOFTWOODS						
Balsam fir	215	--	215	--	--	--
Redcedar	162	--	162	--	--	--
Spruce	3,559	--	3,559	--	--	--
Jack pine	173	--	173	--	--	--
Red pine	2,802	--	2,802	--	--	--
White pine	2,954	--	2,954	--	--	--
N. white-cedar	9,255	--	9,255	--	--	--
Hemlock	3,277	--	3,277	--	--	--
Total	22,396	--	22,396	--	--	--
HARDWOODS						
Soft maple	7,671	--	7,477	194	--	--
Hard maple	13,805	--	13,528	277	--	--
White birch	1,992	--	1,887	105	--	--
Yellow birch	910	--	878	32	--	--
Beech	5,449	--	5,415	34	--	--
Ash	771	--	712	59	--	--
Balsam poplar	39	--	39	--	--	--
Aspen	12,106	--	11,875	232	--	--
Black cherry	712	--	712	--	--	--
Red oak group	1,114	--	979	135	--	--
Basswood	4,410	--	4,343	68	--	--
Elm	199	--	190	9	--	--
Total	49,179	--	48,035	1,144	--	--
All species	71,575	--	70,432	1,144	--	--
Northern Lower Peninsula						
SOFTWOODS						
Balsam fir	182	--	157	--	--	25
Tamarack	13	--	13	--	--	--
Spruce	168	--	143	--	--	25
Jack pine	6,202	--	6,202	--	--	--
Red pine	84,863	--	84,863	--	--	--
White pine	7,270	--	7,220	--	--	50
N. white-cedar	3,670	--	3,670	--	--	--
Hemlock	334	--	334	--	--	--
Toal	102,701	--	102,601	--	--	100
HARDWOODS						
Soft maple	29,382	--	29,382	--	--	--
Hard maple	36,406	--	36,406	--	--	--
White birch	2,363	--	2,363	--	--	--
Yellow birch	331	--	331	--	--	--
Hickory	43	--	43	--	--	--
Beech	4,092	--	4,092	--	--	--
Ash	11,323	--	11,323	--	--	--
Black walnut	127	--	127	--	--	--
Yellow-poplar	14	--	14	--	--	--
Cottonwood	1,053	--	1,053	--	--	--
Balsam poplar	96	--	96	--	--	--
Aspen	70,035	--	70,035	--	--	--
Black cherry	2,116	--	2,116	--	--	--
Red oak group	64,390	--	64,390	--	--	--
White oak group	6,890	--	6,890	--	--	--
Willow	110	--	110	--	--	--
Basswood	13,437	--	13,437	--	--	--
Elm	166	--	166	--	--	--
Total	242,374	--	242,374	--	--	--
All species	345,075	--	344,975	--	--	100

(Table 13 continued on next page)

(Table 13 continued)

Species	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
Southern Lower Peninsula						
SOFTWOODS						
Spruce	1	--	1	--	--	--
Red pine	430	--	430	--	--	--
White pine	89	--	89	--	--	--
Total	521	--	521	--	--	--
HARDWOODS						
Soft maple	13,414	149	13,129	--	137	--
Hard maple	10,600	111	10,382	--	108	--
White birch	81	--	81	--	--	--
Hickory	1,304	11	1,282	--	11	--
Hackberry	610	--	610	--	--	--
Beech	897	2	895	--	--	--
Ash	9,677	84	9,515	--	77	--
Black walnut	506	25	457	--	23	--
Yellow-poplar	339	18	305	--	17	--
Sycamore	27	--	27	--	--	--
Cottonwood	1,878	--	1,878	--	--	--
Aspen	2,688	--	2,688	--	--	--
Black cherry	4,225	36	4,153	--	36	--
Red oak group	30,886	728	29,571	--	587	--
White oak group	12,133	276	11,581	--	276	--
Willow	73	--	73	--	--	--
Basswood	2,698	20	2,662	--	17	--
Elm	82	--	82	--	--	--
Total	92,117	1,459	89,371	--	1,288	--
All species	92,638	1,459	89,891	--	1,288	--
Western Upper Peninsula						
SOFTWOODS						
Balsam fir	18	--	18	--	--	--
Tamarack	8	--	8	--	--	--
Spruce	462	--	458	4	--	--
Jack pine	14	--	14	--	--	--
Red pine	239	--	239	--	--	--
White pine	1,251	--	1,251	--	--	--
N. white-cedar	666	--	661	5	--	--
Hemlock	704	--	702	2	--	--
Total	3,362	--	3,351	11	--	--
HARDWOODS						
Soft maple	14,097	--	13,216	791	--	90
Hard maple	37,065	--	34,891	1,995	--	180
White birch	2,366	--	1,237	1,126	--	3
Yellow birch	7,248	--	6,935	295	--	18
Beech	398	--	393	--	--	5
Ash	1,751	--	1,592	136	--	23
Aspen	12,605	--	11,053	1,485	--	66
Black cherry	1,212	--	1,130	81	--	1
Red oak group	5,676	--	2,321	3,348	--	7
Basswood	3,216	--	2,963	228	--	25
Elm	20	--	20	--	--	--
Total	85,654	--	75,751	9,484	--	419
All species	89,016	--	79,102	9,496	--	419

1/ International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 14.--Veneer log production and receipts in Michigan for selected years, 1946-1994

(In thousand board feet) 1/

Year	Production	Receipts
1946	78,858	46,055
1948	77,684	53,899
1950	53,568	37,404
1952	40,219	28,547
1954	34,499	21,872
1956	39,655	23,564
1958	19,958	12,597
1960	18,487	12,075
1963	15,300	7,598
1965	20,392	12,428
1966	21,942	12,782
1968	19,333	9,573
1969	19,194	14,970
1970	15,039	6,729
1972	18,479	5,324
1974 2/	25,949	25,322
1975	26,079	26,851
1976	33,373	28,764
1977	42,738	30,838
1978	35,030	39,179
1980	36,761	27,287
1984	31,753	13,737
1988	36,201	39,220
1990	37,836	41,736
1992	38,195	40,251
1994	49,096	44,485

1/ International 1/4-inch rule.

2/ Includes veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 15.--Veneer log production and receipts by species group in Michigan, 1992 and 1994

(In thousand board feet) 1/

Species group	Production			Receipts		
	1992	1994	Change	1992	1994	Change
SOFTWOODS						
Jack pine	36	--	-36	121	--	-121
Red pine	200	168	-32	668	421	-247
White pine	672	486	-186	1,110	628	-482
Hemlock	146	--	-146	487	--	-487
Spruce	139	492	353	462	1,229	767
Tamarack	12	89	77	40	222	182
Total	1,205	1,235	30	2,888	2,500	-388
HARDWOODS						
Ash	1,322	1,118	-204	1,151	825	-326
Aspen	6,167	9,185	3,018	19,490	22,501	3,011
Basswood	1,120	572	-548	--	41	41
Beech	2,842	851	-1,991	3,564	913	-2,651
White birch	1,496	3,548	2,052	974	1,504	530
Yellow birch	1,177	1,944	767	379	1,154	775
Cottonwood	50	--	-50	122	171	49
Elm	49	26	-23	57	63	6
Hickory	6	62	56	--	90	90
Hard maple	14,476	21,002	6,526	5,555	9,177	3,622
Soft maple	1,793	924	-869	1,312	6	-1,306
Red oak group	4,406	6,607	2,201	1,859	2,687	828
White oak group	1,129	1,075	-54	2,337	2,285	-52
Black walnut	324	324	0	228	228	0
Yellow-poplar	27	26	-1	1	--	-1
Sycamore	2	--	-2	14	86	72
Balsam poplar	17	--	-17	--	--	0
Black cherry	574	587	13	319	255	-64
Other hardwoods	13	13	0	--	--	--
Total	36,990	47,864	10,874	37,362	41,986	4,624
All species	38,195	49,099	10,904	40,250	44,486	4,236

1/ International 1/4-inch rule.

Table 16.--Veneer log and bolt production by Forest Survey Unit, species group, and destination, Michigan, 1994

(In thousand board feet) 1/

Species group	ALL UNITS					
	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
SOFTWOODS						
Tamarack	89	--	89	--	--	--
Spruce	492	--	492	--	--	--
Red pine	168	--	168	--	--	--
White pine	486	--	251	61	--	174
Total	1,234	--	999	61	--	174
HARDWOODS						
Soft maple	924	--	--	924	--	--
Hard maple	21,002	1,911	8,769	8,132	1,509	682
White birch	3,548	46	1,483	2,019	--	--
Yellow birch	1,944	--	1,102	841	--	--
Hickory	62	2	56	--	--	3
Beech	851	--	731	47	--	73
Ash	1,118	30	728	213	53	93
Black walnut	324	231	31	--	42	19
Yellow-poplar	26	26	--	--	--	--
Aspen	9,185	--	9,001	184	--	--
Black cherry	587	243	204	118	11	11
Red oak group	6,607	495	2,279	3,196	581	57
White oak group	1,075	149	494	5	102	325
Basswood	572	--	41	519	--	12
Elm	26	--	9	--	--	17
Other hardwoods	13	13	--	--	--	--
Total	47,862	3,145	24,928	16,198	2,298	1,293
All species	49,096	3,145	25,927	16,259	2,298	1,467

(Table 16 continued on next page)

(Table 16 continued)

Species group	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
Eastern Upper Peninsula						
SOFTWOODS						
Tamarack	22	--	22	--	--	--
Spruce	25	--	25	--	--	--
Red pine	7	--	7	--	--	--
White pine	129	--	26	--	--	103
Total	182	--	79	--	--	103
HARDWOODS						
Soft maple	200	--	--	200	--	--
Hard maple	5,231	--	3,879	810	--	542
White birch	1,544	--	1,027	517	--	--
Yellow birch	901	--	801	100	--	--
Beech	125	--	79	46	--	--
Ash	93	--	64	30	--	--
Aspen	385	--	385	--	--	--
Black cherry	92	--	88	4	--	--
Red oak group	1,094	--	528	566	--	--
White oak group	4	--	--	4	--	--
Basswood	5	--	3	1	--	--
Total	9,674	--	6,853	2,279	--	542
All species	9,857	--	6,932	2,279	--	645
Northern Lower Peninsula						
SOFTWOODS						
White pine	71	--	--	--	--	71
Total	71	--	--	--	--	71
HARDWOODS						
Hard maple	629	--	532	--	--	97
Hickory	1	--	1	--	--	--
Beech	201	--	201	--	--	--
Ash	324	--	267	--	--	57
Black cherry	93	--	87	--	--	7
Red oak group	1,093	--	1,058	--	--	35
White oak group	270	--	219	--	--	51
Basswood	29	--	21	--	--	9
Elm	10	--	8	--	--	2
Total	2,651	--	2,393	--	--	258
All species	2,721	--	2,393	--	--	329

(Table 16 continued on next page)

(Table 16 continued)

Southern Lower Peninsula						
Species group	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
HARDWOODS						
Hard maple	3,555	1,911	92	--	1,509	43
White birch	46	46	--	--	--	--
Hickory	60	2	55	--	--	3
Beech	423	--	350	--	--	73
Ash	414	30	295	--	53	36
Black walnut	324	231	31	--	42	19
Yellow-poplar	26	26	--	--	--	--
Black cherry	392	243	30	104	11	5
Red oak group	1,697	495	600	--	581	22
White oak group	800	149	275	--	102	274
Basswood	5	--	2	--	--	3
Elm	16	--	1	--	--	15
Other hardwoods	13	13	--	--	--	--
Total	7,771	3,145	1,731	104	2,298	494
All species	7,771	3,145	1,731	104	2,298	494

Western Upper Peninsula						
Species group	Total	Indiana	Michigan	Wisconsin	Ohio	Canada
SOFTWOODS						
Tamarack	67	--	67	--	--	--
Spruce	467	--	467	--	--	--
Red pine	161	--	161	--	--	--
White pine	286	--	225	61	--	--
Total	981	--	920	61	--	--
HARDWOODS						
Soft maple	723	--	--	723	--	--
Hard maple	11,587	--	4,265	7,322	--	--
White birch	1,958	--	456	1,502	--	--
Yellow birch	1,043	--	302	741	--	--
Beech	102	--	101	1	--	--
Ash	286	--	103	184	--	--
Aspen	8,800	--	8,616	184	--	--
Black cherry	9	--	--	9	--	--
Red oak group	2,723	--	93	2,630	--	--
White oak group	1	--	--	1	--	--
Basswood	532	--	15	518	--	--
Total	27,766	--	13,951	13,815	--	--
All species	28,747	--	14,871	13,876	--	--

1/ International 1/4-inch rule.

Table 17.--Veneer log receipts in Michigan by area of origin for selected years, 1946-1994

(In thousand board feet) 1/

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	2/ Canada
1946	46,055	44,534	--	--	956	565
1948	53,899	50,151	127	--	699	2,922
1950	37,404	33,125	454	73	477	3,275
1952	28,547	24,077	1,046	341	650	2,433
1954	21,872	18,596	582	183	137	2,374
1956	23,564	20,341	105	177	80	2,861
1958	12,597	10,785	80	166	40	1,526
1960	12,075	8,628	450	500	245	2,252
1963	7,598	5,315	495	235	165	1,388
1965	12,428	10,344	805	102	180	997
1966	12,782	10,654	585	138	206	1,199
1968	9,573	8,375	332	173	283	410
1969	14,970	12,663	1,498	300	59	450
1970	6,729	5,399	79	77	246	928
1972	5,324	4,565	66	33	--	660
1974 3/	25,322	12,724	11,136	1,092	--	370
1975	26,851	15,609	10,885	357	--	--
1976	28,764	18,516	9,830	418	--	--
1977	30,838	30,378	--	--	460	--
1978	39,179	22,597	15,000	1,000	525	57
1980	27,287	22,087	5,200	--	--	--
1984	13,737	11,052	146	520	2,019	--
1988	39,220	18,623	16,502	--	4,095	--
1990	41,736	21,724	17,110	--	2,902	--
1992	40,251	19,167	16,870	177	3,153	884
1994	44,485	25,927	15,062	--	3,444	52

1/ International 1/4-inch rule.

2/ Includes only logs and bolts shipped to Canadian mills for processing.

3/ Includes all veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 18.--Veneer log and bolt receipts by species group and State of origin, Michigan, 1994

(In thousand board feet) 1/

Species group	Total	Illinois	Indiana	Michigan	Minnesota	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
SOFTWOODS										
Tamarack	222	--	--	89	--	133	--	--	--	--
Spruce	1,229	--	--	492	--	738	--	--	--	--
Red pine	421	--	--	168	--	253	--	--	--	--
White pine	628	--	--	251	--	377	--	--	--	--
Total	2,499	--	--	999	--	1,500	--	--	--	--
HARDWOODS										
Soft maple	6	--	6	--	--	--	--	--	--	--
Hard maple	9,177	46	14	8,769	--	10	91	46	192	10
White birch	1,504	--	--	1,483	--	21	--	--	--	--
Yellow birch	1,154	--	--	1,102	--	21	--	--	--	31
Hickory	90	--	34	56	--	--	--	--	--	--
Beech	913	--	182	731	--	--	--	--	--	--
Ash	825	11	3	728	--	--	23	11	48	--
Black walnut	228	23	10	31	--	--	46	23	96	--
Sycamore	86	--	86	--	--	--	--	--	--	--
Cottonwood	171	--	171	--	--	--	--	--	--	--
Aspen	22,501	--	--	9,001	--	13,500	--	--	--	--
Black cherry	255	--	51	204	--	--	--	--	--	--
Red oak group	2,687	46	14	2,279	--	10	91	46	192	10
White oak group	2,285	211	62	494	--	--	422	211	886	--
Basswood	41	--	--	41	--	--	--	--	--	--
Elm	63	6	7	9	--	--	11	6	24	--
Total	41,986	342	640	24,928	--	13,562	684	342	1,436	52
All species	44,485	342	640	25,927	--	15,062	684	342	1,436	52

1/ International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 19.--Wood material harvested for industrial roundwood by Forest Survey Unit, source of material, and species group, Michigan, 1994 1/

(In thousand cubic feet)

ALL UNITS

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	TOTAL	Limb-wood	Sap-ling	Cull trees	Dead trees	(not used)	TOTAL			
SOFTWOODS													
Balsam fir	6,104.2	2,496.3	347.5	8,948.0	805.0	96.2	95.6	38.4	2,014.4	3,049.7	9,635.8	2,361.9	11,997.7
Redcedar	37.9	26.5	8.1	72.5	1.9	2.0	0.6	0.7	11.0	16.1	69.6	19.1	88.7
Tamarack	442.2	155.7	28.7	626.5	16.3	6.9	3.0	2.5	157.2	185.8	626.5	185.8	812.3
Spruce	4,486.4	1,402.0	323.0	6,211.4	325.3	57.2	45.1	40.7	1,554.5	2,022.9	6,356.8	1,877.5	8,234.3
Jack pine	15,085.6	6,451.5	609.6	22,146.7	3,741.0	254.4	290.3	862.1	4,094.9	9,242.7	26,684.9	4,704.5	31,389.4
Red pine	18,469.5	2,615.3	822.4	21,907.3	1,729.3	114.6	399.5	267.0	5,883.8	8,394.3	23,595.4	6,706.2	30,301.6
White pine	2,972.9	402.5	146.1	3,521.5	120.8	26.6	65.2	56.9	1,033.4	1,302.9	3,644.9	1,179.5	4,824.4
N. white-cedar	3,732.1	1,588.8	607.5	5,928.5	162.2	112.5	35.8	68.2	1,194.8	1,573.4	5,699.6	1,802.3	7,502.0
Hemlock	3,509.6	1,762.4	201.9	5,473.9	312.5	129.4	279.2	156.7	1,834.8	2,712.5	6,149.7	2,036.7	8,186.4
Total	54,840.5	16,901.0	3,094.8	74,836.4	7,214.2	799.8	1,214.3	1,493.3	17,778.8	28,500.3	82,463.1	20,873.6	103,336.8
HARDWOODS													
Soft maple	20,790.5	15,334.5	3,236.2	39,361.2	4,083.5	232.5	2,054.9	396.2	5,204.9	11,972.0	42,892.1	8,441.1	51,333.2
Hard maple	32,248.8	7,705.7	4,603.2	44,557.8	3,809.9	125.3	8,961.8	40.3	14,224.7	27,162.0	52,891.8	18,828.0	71,719.8
White birch	6,825.0	7,337.1	1,130.4	15,292.4	1,475.5	94.6	1,051.5	208.5	2,263.3	5,093.4	16,992.2	3,393.7	20,385.9
Yellow birch	3,014.9	671.0	401.5	4,087.5	337.3	8.2	866.3	2.6	1,328.2	2,542.6	4,900.4	1,729.7	6,630.2
Hickory	401.2	24.2	48.9	474.2	29.7	0.1	15.1	--	78.4	123.3	470.3	127.3	597.6
Hackberry	101.0	4.1	16.2	121.4	1.3	--	0.6	--	16.0	18.0	107.1	32.3	139.4
Beech	2,946.0	620.4	378.8	3,945.2	305.1	10.7	705.0	3.4	1,158.6	2,182.9	4,590.6	1,537.4	6,128.1
Ash	5,370.8	937.6	676.3	6,984.7	413.5	27.7	801.0	8.9	1,649.3	2,900.4	7,559.6	2,325.6	9,885.1
Black walnut	270.3	3.6	36.5	310.5	5.0	--	9.1	--	55.3	69.4	288.0	91.9	379.9
Yellow-poplar	291.2	11.8	46.9	349.9	3.8	--	2.2	--	46.7	52.7	309.0	93.6	402.6
Sycamore	137.7	5.7	22.1	165.5	1.8	--	0.8	--	21.9	24.5	146.0	44.0	190.0
Cottonwood	588.9	103.7	95.8	788.4	19.7	0.4	15.4	2.5	109.4	147.5	730.8	205.2	935.9
Balsam poplar	1,848.7	2,714.8	328.9	4,892.4	425.2	22.7	388.8	82.6	786.3	1,705.7	5,482.8	1,115.2	6,598.1
Aspen	52,427.0	50,748.9	4,875.8	108,051.8	6,024.5	177.2	3,383.3	714.7	16,673.2	26,972.9	113,475.6	21,549.0	135,024.7
Black cherry	1,780.7	271.9	291.0	2,343.6	55.2	1.1	49.9	6.4	333.2	445.7	2,165.1	624.2	2,789.4
Red oak group	20,205.3	8,218.7	2,163.7	30,587.7	3,024.0	219.3	1,042.3	582.2	3,416.6	8,284.4	33,291.8	5,580.3	38,872.1
White oak group	3,989.2	2,013.6	424.4	6,427.2	450.4	82.6	183.0	127.2	664.3	1,507.5	6,846.0	1,088.7	7,934.8
Willow	30.4	1.2	4.9	36.5	0.4	--	0.2	--	4.8	5.4	32.2	9.7	41.9
Basswood	6,395.1	2,716.5	1,044.8	10,156.4	472.3	48.0	343.7	72.1	1,372.1	2,308.1	10,047.6	2,416.9	12,464.5
Elm	152.1	29.1	24.9	206.1	5.4	0.1	4.8	0.7	29.2	40.3	192.2	54.1	246.3
Other hardwoods	225.9	323.2	38.0	587.1	90.4	5.2	385.0	9.4	239.3	729.3	1,039.1	277.4	1,316.4
Total	160,040.7	99,797.4	19,889.4	279,727.6	21,034.2	1,055.6	20,264.6	2,257.9	49,675.8	94,288.2	304,450.4	69,565.3	374,015.7
All species	214,881.3	116,698.5	22,984.3	354,564.0	28,248.5	1,855.4	21,478.9	3,751.2	67,454.6	122,788.4	386,913.6	90,438.9	477,352.5

(Table 19 continued on next page)

(Table 19 continued)

EASTERN UPPER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	TOTAL	Limb-wood	Sap-ling	Cull trees	Dead trees	(not used)	TOTAL			
SOFTWOODS													
Balsam fir	3,080.8	1,135.7	187.9	4,404.4	133.1	50.7	11.4	19.4	1,082.4	1,297.0	4,431.1	1,270.3	5,701.4
Tamarack	249.2	91.1	15.3	355.6	9.4	4.0	1.2	1.3	88.9	104.8	356.3	104.2	460.5
Spruce	1,637.1	476.1	121.1	2,234.3	62.8	21.0	6.4	16.1	581.3	687.5	2,219.4	702.4	2,921.8
Jack pine	3,486.5	2,121.2	153.3	5,761.0	459.6	99.3	49.8	255.1	1,368.4	2,232.2	6,471.5	1,521.7	7,993.2
Red pine	1,957.7	567.7	105.4	2,630.9	112.3	40.4	87.5	56.3	813.9	1,110.4	2,821.9	919.3	3,741.3
White pine	693.8	212.2	38.3	944.3	43.4	15.2	34.9	21.1	298.0	412.6	1,020.7	336.3	1,356.9
N. white-cedar	2,448.1	966.7	390.2	3,805.0	102.5	68.2	22.3	45.5	792.5	1,031.1	3,653.3	1,182.8	4,836.1
Hemlock	1,388.8	865.0	84.9	2,338.8	148.4	63.9	138.0	74.2	803.2	1,227.7	2,678.3	888.2	3,566.4
Total	14,942.0	6,435.7	1,096.6	22,474.3	1,071.4	362.9	351.4	489.2	5,828.5	8,103.3	23,652.5	6,925.2	30,577.7
HARDWOODS													
Soft maple	3,789.6	3,645.1	646.6	8,081.2	585.7	35.7	514.2	108.3	1,234.7	2,478.6	8,678.5	1,881.2	10,559.8
Hard maple	7,005.1	1,952.0	1,003.7	9,960.9	1,059.9	4.7	2,933.3	1.5	4,014.7	8,014.1	12,956.5	5,018.5	17,975.0
White birch	2,262.8	2,125.8	392.9	4,781.5	340.8	18.7	327.0	63.7	763.8	1,513.9	5,138.8	1,156.7	6,295.4
Yellow birch	1,127.0	326.2	156.0	1,609.2	178.9	*	512.4	--	677.3	1,368.7	2,144.5	833.4	2,977.9
Hickory	12.4	15.0	--	27.4	19.9	0.1	2.7	--	--	22.7	50.1	--	50.1
Beech	1,318.9	234.4	169.2	1,722.5	136.8	0.7	334.1	0.2	539.1	1,010.9	2,025.1	708.3	2,733.4
Ash	307.7	84.9	40.7	433.2	46.0	0.4	121.0	0.1	166.2	333.7	560.0	206.9	766.9
Balsam poplar	803.1	1,147.8	145.5	2,096.4	177.7	6.1	171.2	35.5	349.0	739.4	2,341.4	494.5	2,835.9
Aspen	7,764.7	8,199.1	878.9	16,842.7	359.1	7.1	497.3	112.9	2,760.6	3,736.9	16,940.2	3,639.4	20,579.6
Black cherry	198.3	126.3	33.7	358.3	22.5	0.6	20.4	3.7	56.2	103.4	371.8	89.9	461.7
Red oak group	353.5	252.8	56.9	663.3	49.7	2.5	39.7	16.7	119.7	228.3	715.0	176.6	891.6
White oak group	1.4	3.2	0.3	4.9	0.6	*	0.3	0.2	0.9	2.0	5.7	1.2	6.9
Basswood	949.8	386.6	165.7	1,502.1	62.8	3.0	53.1	10.4	206.3	335.6	1,465.8	371.9	1,837.7
Elm	27.8	2.3	4.5	34.6	0.5	*	0.3	*	4.6	5.6	31.0	9.1	40.1
Other hardwoods	58.8	84.5	10.7	154.0	35.6	0.4	215.5	2.6	116.7	370.9	397.5	127.4	524.9
Total	25,981.0	18,586.0	3,705.1	48,272.2	3,076.4	80.2	5,742.6	355.8	11,009.9	20,264.8	53,822.0	14,715.0	68,537.0
All species	40,923.0	25,021.7	4,801.7	70,746.5	4,147.8	443.0	6,094.0	845.0	16,838.4	28,368.2	77,474.5	21,640.1	99,114.7

(Table 19 continued on next page)

(Table 19 continued)

WESTERN UPPER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	TOTAL	Limb-wood	Sap-ling	Cull trees	Dead trees	(not used)	TOTAL			
SOFTWOODS													
Balsam fir	2,543.2	924.5	155.1	3,622.8	96.5	40.7	9.2	14.7	909.4	1,070.6	3,628.9	1,064.6	4,693.4
Tamarack	190.8	64.5	13.1	268.4	6.9	2.8	1.7	1.1	67.5	80.0	267.9	80.6	348.5
Spruce	2,683.0	790.0	198.4	3,671.3	95.2	34.5	16.8	23.3	955.7	1,125.5	3,642.7	1,154.1	4,796.8
Jack pine	3,479.0	2,277.2	199.9	5,956.0	288.3	108.6	55.4	255.5	1,594.7	2,302.4	6,463.9	1,794.6	8,258.5
Red pine	1,409.5	454.4	77.7	1,941.6	87.5	32.7	73.3	45.5	616.6	855.6	2,102.8	694.4	2,797.2
White pine	1,064.7	167.4	56.2	1,288.2	39.9	11.4	29.2	22.6	386.4	489.4	1,335.1	442.6	1,777.7
N. white-cedar	675.1	416.0	119.2	1,210.3	32.4	29.3	8.1	9.9	206.5	286.2	1,170.8	325.7	1,496.5
Hemlock	2,066.7	896.1	114.6	3,077.5	163.1	65.4	141.2	82.0	1,015.2	1,466.8	3,414.5	1,129.8	4,544.3
Total	14,111.9	5,990.2	934.2	21,036.2	809.7	325.4	334.9	454.5	5,752.1	7,676.6	22,026.6	6,686.3	28,712.8
HARDWOODS													
Soft maple	5,800.2	4,979.8	986.6	11,766.6	803.5	46.5	713.9	147.5	1,797.7	3,509.2	12,491.5	2,784.4	15,275.9
Hard maple	15,565.0	4,355.5	2,217.7	22,138.2	2,030.7	79.0	4,973.6	25.6	7,446.2	14,555.1	27,029.4	9,663.9	36,693.3
White birch	2,713.7	2,843.4	474.5	6,031.6	452.5	25.9	434.0	85.5	969.7	1,967.5	6,555.0	1,444.2	7,999.1
Yellow birch	1,830.2	343.6	238.3	2,412.1	157.1	8.1	352.9	2.6	640.0	1,160.7	2,694.5	878.3	3,572.9
Beech	362.1	117.7	48.8	528.6	63.6	--	182.7	--	234.7	481.0	726.1	283.5	1,009.6
Ash	969.6	526.6	120.8	1,617.0	187.6	18.9	383.7	6.1	509.2	1,105.6	2,092.5	630.1	2,722.5
Balsam poplar	808.4	1,241.0	141.2	2,190.6	196.6	14.2	170.2	37.2	339.3	757.5	2,467.6	480.4	2,948.1
Aspen	15,587.6	15,733.3	1,508.6	32,829.4	1,073.7	55.4	1,074.0	235.5	5,314.9	7,753.4	33,759.3	6,823.5	40,582.8
Black cherry	288.0	95.3	47.5	430.8	16.3	0.4	14.4	2.7	62.5	96.3	417.1	110.1	527.2
Red oak group	1,157.1	756.0	168.1	2,081.1	153.1	13.7	107.9	48.6	331.9	655.3	2,236.4	500.0	2,736.5
White oak group	26.3	38.2	3.8	68.3	7.3	0.4	3.3	2.5	10.9	24.4	78.1	14.7	92.8
Basswood	2,165.0	1,445.2	350.5	3,960.7	246.4	30.0	179.7	39.6	537.1	1,032.7	4,105.9	887.5	4,993.4
Elm	17.8	8.9	3.0	29.6	1.5	*	1.3	0.3	4.4	7.5	29.7	7.4	37.2
Other hardwoods	96.1	138.1	17.4	251.6	37.0	0.7	161.0	4.3	105.0	308.0	437.1	122.4	559.5
Total	47,386.9	32,622.5	6,327.0	86,336.3	5,427.1	293.4	8,752.7	637.8	18,303.5	33,414.4	95,120.3	24,630.4	119,750.7
All species	61,498.7	38,612.6	7,261.2	107,372.5	6,236.7	618.8	9,087.6	1,092.4	24,055.5	41,091.1	117,146.9	31,316.7	148,463.6

(Tabe 19 continued on next page)

(Table 19 continued)

NORTHERN LOWER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	TOTAL	Limb-wood	Sap-ling	Cull trees	Dead trees	(not used)	TOTAL			
SOFTWOODS													
Balsam fir	480.2	436.2	4.5	920.8	575.4	4.8	75.0	4.3	22.6	682.1	1,575.8	27.0	1,602.8
Tamarack	2.2	*	0.3	2.5	0.1	--	*	0.1	0.8	0.9	2.4	1.1	3.4
Spruce	166.4	135.8	3.5	305.8	167.3	1.8	22.0	1.3	17.5	209.9	494.7	21.0	515.7
Jack pine	8,119.8	2,052.9	256.4	10,429.0	2,993.1	46.5	185.1	351.5	1,131.6	4,707.8	13,748.8	1,388.0	15,136.8
Red pine	13,848.1	1,570.9	584.0	16,003.0	1,507.9	41.5	238.4	153.6	4,081.8	6,023.2	17,360.4	4,665.7	22,026.2
White pine	1,176.5	22.4	50.0	1,248.9	36.9	--	1.1	12.8	337.8	388.5	1,249.6	387.8	1,637.4
N. white-cedar	609.0	206.1	98.0	913.2	27.2	14.9	5.4	12.8	195.8	256.2	875.5	293.8	1,169.3
Hemlock	50.9	0.9	2.2	53.9	0.9	--	--	0.5	15.2	16.6	53.1	17.4	70.5
Total	24,453.0	4,425.2	998.8	29,877.0	5,308.7	109.5	527.0	536.9	5,803.1	12,285.2	35,360.3	6,801.9	42,162.2
HARDWOODS													
Soft maple	8,791.6	6,322.4	1,220.8	16,334.8	2,612.2	138.2	789.7	133.0	1,772.7	5,445.7	18,787.0	2,993.5	21,780.5
Hard maple	7,662.7	1,347.4	1,069.2	10,079.3	667.4	41.4	950.6	13.2	2,283.2	3,955.7	10,682.6	3,352.4	14,035.1
White birch	1,791.7	2,333.4	253.3	4,378.4	676.6	49.8	284.8	58.3	513.7	1,583.3	5,194.7	767.0	5,961.8
Yellow birch	51.6	1.1	6.4	59.1	1.2	*	0.9	*	9.7	11.8	54.8	16.1	70.9
Hickory	9.1	1.6	1.2	11.9	0.9	--	2.5	--	3.9	7.4	14.2	5.1	19.3
Beech	906.3	249.7	112.1	1,268.0	91.3	10.0	155.3	3.2	291.6	551.4	1,415.7	403.7	1,819.4
Ash	2,169.9	280.9	271.8	2,722.6	131.9	8.3	235.9	2.7	586.5	965.2	2,829.6	858.3	3,687.8
Black walnut	2.0	*	0.2	2.3	*	--	*	--	0.4	0.5	2.1	0.6	2.7
Cottonwood	216.8	86.4	36.0	339.2	14.5	0.4	12.9	2.5	49.9	80.2	333.5	85.9	419.4
Balsam poplar	237.1	326.0	42.2	605.4	50.9	2.4	47.4	10.0	98.1	208.7	673.8	140.3	814 1
Aspen	28,175.2	26,064.0	2,403.4	56,642.6	4,543.5	112.8	1,768.3	355.5	8,314.1	15,094.3	61,019.3	10,717.5	71,736.8
Black cherry	360.0	14.2	58.2	432.4	4.6	--	3.6	--	58.9	67.1	382.5	117.1	499.5
Red oak group	12,899.2	6,040.5	1,319.7	20,259.4	2,487.8	153.8	710.7	393.7	2,132.5	5,878.6	22,685.8	3,452.3	26,138.0
White oak group	1,680.3	956.9	184.8	2,822.0	208.7	30.1	87.6	63.6	320.5	710.6	3,027.3	505.2	3,532.5
Willow	17.8	0.7	2.9	21.4	0.2	--	0.1	--	2.8	3.2	18.9	5.7	24.6
Basswood	2,771.3	834.0	446.5	4,051.8	151.9	14.8	103.3	21.1	542.0	833.1	3,896.4	988.5	4,884.9
Elm	34.8	13.1	5.8	53.7	2.2	0.1	2.1	0.4	8.1	12.8	52.7	13.9	66.5
Other hardwoods	43.6	99.0	5.5	148.1	17.4	4.0	8.0	2.5	13.1	45.0	174.6	18.5	193.1
Total	67,820.9	44,971.6	7,440.0	120,232.5	11,663.4	566.0	5,163.8	1,059.7	17,001.5	35,454.5	131,245.5	24,441 5	155,687.0
All species	92,274.0	49,396.7	8,438.8	150,109.5	16,972.1	675.5	5,690.8	1,596.6	22,804.6	47,739.7	166,605.8	31,243.4	197,849.2

(Table 19 continued on next page)

(Table 19 continued)

SOUTHERN LOWER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	TOTAL	Limb-wood	Sap-ling	Cull trees	Dead trees	(not used)	TOTAL			
SOFTWOODS													
Redcedar	37.9	26.5	8.1	72.5	1.9	2.0	0.6	0.7	11.0	16.1	69.6	19.1	88.7
Jack pine	0.4	0.3	0.0	0.6	*	*	*	*	0.2	0.2	0.7	0.2	0.9
Red pine	1,254.3	22.3	55.3	1,331.8	21.7	*	0.3	11.6	371.5	405.1	1,310.2	426.8	1,737.0
White pine	37.8	0.6	1.6	40.1	0.7	--	--	0.4	11.3	12.3	39.5	12.9	52.4
Hemlock	3.2	0.4	0.1	3.8	0.1	*	0.1	0.1	1.1	1.3	3.8	1.3	5.1
Total	1,333.6	50.1	65.2	1,448.9	24.4	2.1	0.9	12.7	395.0	435.2	1,423.8	460.3	1,884.0
HARDWOODS													
Soft maple	2,409.1	387.3	382.2	3,178.6	82.1	12.0	37.1	7.5	399.8	538.5	2,935.1	782.0	3,717.1
Hard maple	2,016.1	50.8	312.5	2,379.4	51.8	0.1	104.4	*	480.7	637.1	2,223.2	793.2	3,016.5
White birch	56.7	34.4	9.7	100.9	5.6	0.2	5.8	1.0	16.1	28.7	103.7	25.8	129.5
Yellow birch	6.2	0.1	0.8	7.1	0.1	--	0.1	--	1.2	1.4	6.6	1.9	8.5
Hickory	379.7	7.6	47.7	434.9	8.9	--	9.8	--	74.5	93.2	405.9	122.2	528.1
Hackberry	101.0	4.1	16.2	121.4	1.3	--	0.6	--	16.0	18.0	107.1	32.3	139.4
Beech	358.7	18.6	48.8	426.0	13.4	*	33.0	*	93.2	139.6	423.7	142.0	565.6
Ash	1,923.7	45.2	242.9	2,211.9	48.0	0.1	60.4	*	387.4	495.9	2,077.5	630.3	2,707.8
Black walnut	268.3	3.6	36.3	308.2	4.9	--	9.0	--	55.0	68.9	285.9	91.3	377.1
Yellow-poplar	291.2	11.8	46.9	349.9	3.8	--	2.2	--	46.7	52.7	309.0	93.6	402.6
Sycamore	137.7	5.7	22.1	165.5	1.8	--	0.8	--	21.9	24.5	146.0	44.0	190.0
Cottonwood	372.2	17.2	59.8	449.2	5.2	*	2.5	0.1	59.5	67.3	397.3	119.3	516.6
Aspen	899.5	752.6	84.9	1,737.0	48.2	2.0	43.7	10.8	283.6	388.3	1,756.8	368.5	2,125.3
Black cherry	934.5	36.0	151.6	1,122.1	11.8	--	11.5	--	155.6	178.9	993.8	307.2	1,301.0
Red oak group	5,795.4	1,169.4	619.0	7,583.9	333.4	49.3	183.9	123.2	832.4	1,522.1	7,654.6	1,451.4	9,106.0
White oak group	2,281.2	1,015.3	235.6	3,532.1	233.8	52.0	91.7	60.9	332.0	770.5	3,734.9	567.6	4,302.5
Willow	12.6	0.5	2.0	15.1	0.2	--	0.1	--	2.0	2.2	13.3	4.0	17.3
Basswood	509.0	50.7	82.2	641.9	11.2	0.2	7.6	0.9	86.8	106.7	579.6	169.0	748.6
Elm	71.7	4.8	11.6	88.1	1.2	*	1.0	0.1	12.1	14.3	78.8	23.7	102.5
Other hardwoods	27.4	1.6	4.4	33.5	0.4	*	0.4	*	4.6	5.4	29.9	9.0	38.9
Total	18,851.9	3,617.4	2,417.4	24,886.6	867.3	116.0	605.5	204.5	3,361.0	5,154.4	24,262.7	5,778.3	30,041.0
All species	20,185.5	3,667.4	2,482.6	26,335.5	891.8	118.1	606.5	217.2	3,756.0	5,589.5	25,686.5	6,238.6	31,925.1

**=Less than 50 cubic feet.*

1/Based on factors obtained from the Michigan Utilization Study of 1980 and other regional utilization studies.

Rows and columns may not sum due to rounding.

Table 20.--Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county and species group, Michigan, 1994

(In thousand cubic feet)

Unit and county	Balsam fir	Red cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hemlock	Total soft woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry
EASTERN UPPER PENINSULA																
Alger	527	--	49	144	771	446	130	83	462	2,612	2,126	3,041	663	351	25	
Chippewa	812	--	67	352	1,346	586	133	149	324	3,770	899	866	388	54		
Delta	695	--	59	363	1,060	614	173	1,695	332	4,990	1,394	919	838	856		
Luce	449	--	39	273	630	220	128	72	396	2,208	979	1,787	315	92		
Mackinac	434	--	31	338	322	228	63	88	155	1,659	786	971	824	79		
Menominee	634	--	28	470	241	187	165	1,377	106	3,208	825	1,105	1,206	73		
Schoolcraft	852	--	82	294	1,391	349	152	341	566	4,027	1,071	1,271	548	104	2	
Total	4,404	--	356	2,234	5,761	2,631	944	3,805	2,339	22,474	8,081	9,961	4,782	1,609	27	
WESTERN UPPER PENINSULA																
Baraga	163	--	18	393	282	79	59	53	396	1,443	1,232	2,312	642	351		
Dickinson	380	--	46	396	869	236	121	342	159	2,550	498	810	682	56		
Gogebic	275	--	3	431	57	208	166	*	120	1,260	1,486	3,517	262	386		
Houghton	288	--	14	211	404	161	93	38	410	1,619	1,857	3,572	974	412		
Iron	982	--	50	960	779	376	311	62	264	3,784	1,602	3,091	899	285		
Keweenaw	3	--	*	23	3	69	45	63	2	208	352	648	131	78		
Marquette	1,385	--	136	1,045	2,859	515	417	631	1,662	8,649	3,119	4,451	2,048	414		
Ontonagon	146	--	2	212	703	298	75	21	65	1,522	1,621	3,737	393	431		
Total	3,623	--	268	3,671	5,956	1,942	1,288	1,210	3,077	21,036	11,767	22,138	6,032	2,412		
NORTHERN LOWER PENINSULA																
Alcona	85	--	--	2	160	493	125	1	--	866	670	77	270			
Alpena	283	--	--	7	69	116	58	607	--	1,140	618	40	202			
Antrim	2	--	--	12	5	175	6	4	7	212	234	734	34	5		
Arenac	--	--	--	--	16	6	3	8	--	34	272	8	72			
Bay	--	--	--	--	--	--	--	--	--	--	13	--				
Benzie	2	--	--	29	1	545	2	--	2	581	365	727	111	1		
Charlevoix	7	--	--	2	12	214	24	42	5	306	198	744	121	32		
Cheboygan	71	--	--	20	756	540	71	29	*	1,487	636	740	212			
Clare	4	--	--	--	83	249	10	2	--	349	1,151	71	171		*	
Crawford	16	--	--	3	1,817	896	112	4	1	2,849	278	124	76			
Emmet	9	--	--	4	153	188	8	14	1	378	317	662	85	5		
Gladwin	--	--	--	--	26	54	22	*	--	103	460	15	88		*	
Grand Traverse	--	--	--	3	552	892	13	--	2	1,463	334	374	43	*		
Iosco	23	--	--	--	127	606	69	29	2	855	384	47	155	*		
Isabella	--	--	--	--	--	10	1	--	1	12	265	51	84			
Kalkaska	13	--	--	29	1,071	1,756	40	*	2	2,912	582	535	90	2		
Lake	--	--	--	14	630	1,350	27	--	4	2,026	416	70	78	*		
Leelanau	1	--	--	7	94	124	9	4	1	242	105	473	35	1		
Manistee	--	--	--	2	116	599	17	--	2	736	1,045	720	150	*		
Mason	--	--	--	--	90	276	9	--	1	376	455	111	96	*		
Mecosta	--	--	--	--	2	268	18	--	2	291	374	249	88	3	1	
Midland	--	--	--	--	3	29	10	--	--	41	582	11	135	1	*	
Missaukee	9	--	2	69	279	513	32	10	1	915	643	250	175			
Montmorency	62	--	--	2	396	615	83	7	--	1,166	825	373	240	*		
Newaygo	--	--	--	--	--	1,063	42	--	4	1,108	752	218	34	1	2	
Oceana	--	--	--	--	--	188	24	--	9	220	347	190	47	1	9	
Ogemaw	14	--	--	*	495	239	55	22	--	824	556	139	228	1		
Oscoda	2	--	--	11	22	180	6	--	1	222	516	269	124			
Otsego	48	--	--	--	981	955	202	1	4	2,192	392	154	163	2		
Presque Isle	38	--	--	16	340	625	58	3	2	1,082	460	937	87	3		
Roscommon	216	--	1	31	312	250	24	113	--	947	917	256	690	--	--	
Wexford	12	--	--	--	1,509	452	64	10	*	2,047	701	55	131	1		
Total	2	--	--	42	311	1,534	5	--	1	1,895	472	655	62	1		
	921	--	3	306	10,429	16,003	1,249	913	54	29,877	16,335	10,079	4,378	59	12	

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
SOUTHERN LOWER PENINSULA																
Allegan	--	--	--	--	--	936	2	--	--	938	185	22	--	--	12	3
Barry	--	--	--	--	--	22	1	--	--	22	150	383	--	--	24	10
Berrien	--	--	--	--	--	*	--	--	--	*	23	156	1	--	4	1
Branch	--	--	--	--	--	--	--	--	--	--	130	14	--	--	3	2
Calhoun	--	--	--	--	--	*	--	--	--	*	140	24	--	--	45	7
Cass	--	--	--	--	--	--	--	--	--	--	67	20	--	--	17	3
Clinton	--	--	--	--	--	--	--	--	--	--	274	3	--	--	30	3
Eaton	--	--	--	--	--	*	--	--	--	*	144	231	10	--	43	5
Genesee	--	--	--	--	--	--	--	--	--	--	14	53	--	--	1	1
Gratiot	--	--	--	--	1	--	1	--	--	1	98	10	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	13	126	--	--	2	1
Huron	--	--	--	--	--	--	--	--	--	--	20	1	8	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	100	60	--	--	13	3
Ionia	--	--	--	--	--	16	--	--	--	16	38	51	--	--	14	*
Jackson	--	73	--	--	--	*	*	--	1	74	34	2	--	--	47	14
Kalamazoo	--	--	--	--	--	9	*	--	--	9	64	13	--	--	9	2
Kent	--	--	--	--	--	44	2	--	--	46	335	408	*	*	7	2
Lapeer	--	--	--	--	--	14	*	--	--	14	114	114	2	5	1	3
Lenawee	--	--	--	--	--	--	--	--	--	--	7	141	--	--	23	7
Livingston	--	--	--	--	--	4	--	--	--	4	25	1	--	--	3	6
Macomb	--	--	--	--	--	--	--	--	--	--	11	17	--	--	--	6
Monroe	--	--	--	--	--	--	--	--	--	--	7	4	--	--	15	5
Montcalm	--	--	--	--	--	139	16	--	1	156	362	32	47	1	2	1
Muskegon	--	--	--	--	--	51	15	--	1	68	253	33	16	1	*	*
Oakland	--	--	--	--	--	*	*	--	--	*	19	27	--	--	2	6
Ottawa	--	--	--	--	--	82	1	--	1	84	103	79	--	*	2	*
Saginaw	--	--	--	--	--	*	2	--	--	2	88	25	2	--	11	2
Sanilac	--	--	--	--	--	--	*	--	--	*	13	--	3	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	51	43	--	--	6	3
St. Clair	--	--	--	--	--	*	*	--	--	*	62	74	--	--	1	2
St. Joseph	--	--	--	--	--	--	--	--	--	--	82	18	--	--	46	9
Tuscola	--	--	--	--	--	--	--	--	--	--	38	52	11	--	--	*
Van Buren	--	--	--	--	--	*	--	--	--	*	91	138	--	--	19	5
Washtenaw	--	--	--	--	--	13	--	--	--	13	18	2	--	--	34	8
Wayne	--	--	--	--	--	--	--	--	--	--	9	1	--	--	1	1
Total	--	73	--	--	1	1,332	40	--	4	1,449	3,179	2,379	101	7	435	121
State total	8,948	73	627	6,211	22,147	21,907	3,522	5,929	5,474	74,836	39,361	44,558	15,292	4,088	474	121

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Sycamore	Cottonwood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
EASTERN UPPER PENINSULA																	
Alger	696	98	--	--	--	--	249	1,916	70	120	*	--	338	*	44	9,739	12,351
Chippewa	109	27	--	--	--	--	509	2,040	3	43	*	--	151	--	8	5,097	8,867
Delta	194	72	--	--	--	--	332	4,050	17	111	2	--	170	2	23	8,981	13,971
Luce	346	33	--	--	--	--	33	827	27	110	--	--	112	--	26	4,687	6,894
Mackinac	101	61	--	--	--	--	485	2,360	17	19	--	--	334	--	5	6,042	7,701
Menominee	83	94	--	--	--	--	211	4,398	8	210	2	--	245	32	24	8,517	11,725
Schoolcraft	193	49	--	--	--	--	277	1,252	6	51	1	--	152	*	23	5,000	9,027
Total	1,722	433	--	--	--	--	2,096	16,843	148	663	5	--	1,502	35	154	48,062	70,536
WESTERN UPPER PENINSULA																	
Baraga	26	143	--	--	--	--	213	2,541	54	127	2	--	288	1	20	7,952	9,395
Dickinson	13	57	--	--	--	--	170	4,894	1	87	5	--	209	7	12	7,499	10,049
Gogebic	4	304	--	--	--	--	82	3,257	74	334	16	--	674	5	52	10,452	11,713
Houghton	31	234	--	--	--	--	224	2,655	18	326	8	--	471	2	38	10,822	12,441
Iron	36	167	--	--	--	--	440	5,614	73	289	9	--	662	6	44	13,218	17,001
Keweenaw	--	48	--	--	--	--	11	429	*	184	3	--	62	--	7	1,953	2,161
Marquette	418	126	--	--	--	--	649	6,647	34	401	10	--	416	7	57	18,798	27,447
Ontonagon	1	538	--	--	--	--	402	6,793	25	333	16	--	1,178	3	21	15,492	17,014
Total	529	1,617	--	--	--	--	2,191	32,829	280	2,081	68	--	3,961	30	252	86,185	107,221
NORTHERN LOWER PENINSULA																	
Alcona	16	82	--	--	--	--	139	3,774	7	1,689	106	--	89	*	*	6,920	7,785
Alpena	6	85	--	--	--	--	25	2,018	*	398	6	--	52	*	--	3,452	4,592
Antrim	46	104	*	--	--	--	*	646	13	23	*	--	451	5	--	2,295	2,508
Arenac	1	54	--	--	--	4	8	1,147	1	140	6	--	4	--	--	1,715	1,749
Bay	*	9	--	--	--	2	--	32	*	--	2	--	1	--	--	59	59
Benzie	82	91	--	--	--	--	--	565	31	52	7	--	214	1	40	2,287	2,867
Charlevoix	102	164	--	--	--	33	--	1,158	9	86	15	--	338	4	--	3,006	3,312
Cheboygan	96	221	--	--	--	38	25	3,212	5	322	30	--	394	*	--	5,932	7,419
Clare	13	32	--	--	--	--	2	4,781	12	856	105	--	6	1	3	7,205	7,553
Crawford	18	19	--	--	--	--	1	1,254	4	1,034	51	--	57	--	2	2,919	5,768
Emmet	108	154	--	--	--	22	2	1,141	15	80	15	--	222	1	*	2,830	3,208
Gladwin	1	49	--	--	--	2	14	2,177	1	398	36	--	9	1	--	3,252	3,355
Grand Traverse	26	29	--	--	--	--	2	450	9	174	51	--	102	-	7	1,601	3,064
Iosco	1	60	--	--	--	3	13	1,034	3	309	32	--	7			2,048	2,903
Isabella	2	51	*	--	--	17	--	1,177	3	492	77	1	43	8	-	2,272	2,284
Kalkaska	30	34	--	--	--	--	--	1,067	14	168	15	--	106	--	--	2,642	5,554
Lake	20	53	--	--	--	--	*	1,648	21	1,904	499	*	30	*	7	4,743	6,774
Leelanau	35	157	--	--	--	--	--	118	2	56	--	--	106	--	1	1,089	1,332
Manistee	120	96	--	--	--	--	--	1,567	62	1,174	191	--	61	--	41	5,227	5,963
Mason	31	36	--	--	--	--	*	1,311	21	775	188	2	26	--	5	3,056	3,433
Mecosta	40	148	*	--	--	29	--	2,103	25	418	110	2	68	2	5	3,664	3,955
Midland	11	59	--	--	--	114	9	1,442	1	285	131	--	19	3	--	2,803	2,844
Missaukee	47	70	--	--	--	--	1	2,146	9	312	87	--	144	--	14	3,897	4,812
Montmorency	13	88	--	--	--	--	117	3,137	2	1,651	34	--	331	*	-	6,810	7,976
Nowaygo	59	95	2	--	--	7	*	1,411	45	1,510	500	9	63	8	2	4,716	5,824
Oceana	60	83	--	--	--	21	--	1,037	34	726	167	7	52	8	*	2,791	3,011
Ogemaw	27	43	--	--	--	--	19	2,546	1	851	28	--	113	--	1	4,554	5,378
Osceola	48	104	--	--	--	2	--	1,836	20	722	87	1	101	-	*	3,829	4,051
Oscoda	9	31	--	--	--	--	17	1,810	10	1,088	59	--	42	8	-	3,786	5,979
Otsego	63	77	--	--	--	19	3	2,054	5	183	14	--	487	2	-	4,393	5,475
Presque Isle	51	218	--	--	--	25	202	3,548	*	821	51	--	182			6,962	7,909
Roscommon	4	43	--	--	--	--	2	2,473	2	1,210	92	--	9	-	-	4,724	6,771
Wexford	80	81	--	--	--	--	5	821	45	350	30	--	123	*	21	2,747	4,642
Total	1,268	2,723	2	--	--	339	605	56,643	432	20,259	2,822	21	4,052	54	148	120,232	150,109

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
SOUTHERN LOWER PENINSULA																	
Allegan	26	99	1	227	--	*	--	129	53	643	460	--	10	--	3	1,872	2,810
Barry	27	54	3	0	--	*	--	9	112	601	103	--	42	1	5	1,525	1,547
Berrien	15	19	1	88	160	3	--	2	80	46	30	--	6	13	4	654	654
Branch	1	77	4	1	1	2	--	1	10	22	27	--	8	2	--	304	304
Calhoun	11	167	*	2	*	1	--	2	125	210	134	--	83	6	3	962	962
Cass	7	53	35	6	--	--	--	3	91	130	34	--	8	18	4	496	496
Clinton	8	53	13	--	--	2	--	1	88	82	44	*	25	1	--	626	626
Eaton	56	241	16	--	--	20	--	7	16	136	88	--	67	11	--	1,093	1,093
Genesee	3	27	4	--	--	10	--	1	4	50	23	--	14	1	--	205	205
Gratiot	--	46	--	--	--	32	--	17	1	189	58	*	21	--	--	472	473
Hillsdale	1	28	11	--	*	*	--	--	14	33	6	--	5	--	--	243	243
Huron	*	47	--	--	--	123	--	58	2	6	--	--	4	--	--	270	270
Ingham	8	79	*	--	*	13	--	2	16	38	19	--	25	3	--	380	380
Ionia	42	39	3	--	--	3	--	22	36	116	11	1	39	1	--	417	433
Jackson	4	48	26	--	*	*	--	2	70	341	139	--	18	1	3	749	823
Kalamazoo	2	34	1	14	--	1	--	7	39	153	92	--	6	--	1	439	447
Kent	8	78	10	3	--	--	--	316	44	663	270	4	32	*	2	2,181	2,227
Lapeer	11	43	--	--	--	31	--	72	5	198	71	--	5	*	--	675	689
Lenawee	16	15	12	--	*	--	--	*	5	22	12	--	38	--	--	299	299
Livingston	4	33	--	--	1	4	--	*	34	240	104	--	1	--	--	454	458
Macomb	2	14	--	--	--	8	--	9	1	37	58	--	1	--	--	165	165
Monroe	1	15	16	--	*	2	--	--	4	31	24	--	3	--	--	128	128
Montcalm	26	204	2	--	--	--	--	379	18	833	543	7	51	13	*	2,521	2,677
Muskegon	48	37	--	--	--	--	--	475	10	1,036	389	2	1	--	1	2,303	2,371
Oakland	3	42	1	--	*	5	--	*	20	109	38	--	6	--	--	280	280
Ottawa	36	33	--	2	--	1	--	30	5	275	115	--	4	*	--	683	767
Saginaw	--	90	--	--	--	19	--	6	1	81	121	--	1	--	--	448	450
Sanilac	1	59	--	--	--	7	--	20	4	21	*	--	6	--	--	134	134
Shiawassee	6	94	2	--	--	15	--	18	19	95	33	--	24	--	--	406	406
St. Clair	13	88	--	--	--	79	--	*	15	284	121	--	13	--	--	752	753
St. Joseph	2	66	92	5	1	*	--	11	44	285	71	--	10	3	1	746	746
Tuscola	6	73	*	--	--	60	--	132	11	26	12	--	36	5	--	464	464
Van Buren	28	80	1	2	--	--	--	5	103	394	65	--	13	5	4	954	954
Washtenaw	3	25	54	--	1	3	--	--	20	112	193	--	2	--	*	477	490
Wayne	2	10	--	--	*	5	--	--	--	45	24	--	14	3	--	113	113
Total	426	2,212	308	350	165	449	--	1,737	1,122	7,584	3,532	15	642	88	33	24,887	26,336
State total	3,945	6,985	310	350	165	788	4,892	108,052	1,982	30,588	6,427	37	10,156	206	587	279,366	354,202

** = Less than 500 cubic feet.*

Table 21.--Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1994

(In thousand board feet) 1/

Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
EASTERN UPPER PENINSULA																
Alger	1,433	--	133	422	1,747	1,531	501	251	1,202	7,220	5,150	11,337	1,720	1,572	58	--
Chippewa	2,203	--	180	1,017	3,742	2,474	401	525	809	11,350	1,801	3,163	719	226	--	--
Delta	1,896	--	160	1,174	2,293	2,796	683	6,241	840	16,084	3,057	3,284	1,986	2,543	--	--
Luce	1,224	--	105	766	1,369	730	529	236	989	5,947	2,664	7,442	745	416	--	--
Mackinac	1,198	--	83	949	723	821	199	312	387	4,672	1,407	3,504	1,578	267	--	--
Menominee	1,675	--	87	1,783	522	756	841	4,555	271	10,490	1,644	3,805	2,638	269	--	--
Schoolcraft	2,308	--	221	822	3,015	1,109	463	784	1,414	10,136	2,174	3,884	1,433	352	5	--
Total	11,936	--	969	6,932	13,411	10,217	3,618	12,903	5,912	65,898	17,896	36,418	10,818	5,645	63	--
WESTERN UPPER PENINSULA																
Baraga	440	--	51	1,742	783	258	277	228	1,954	5,732	3,400	9,451	1,275	1,681	--	--
Dickinson	1,053	--	140	1,116	1,940	727	513	797	401	6,688	982	2,952	1,561	210	--	--
Gogebic	779	--	17	1,419	175	1,148	927	2	489	4,955	3,847	15,666	722	1,923	--	--
Houghton	777	--	41	616	944	598	446	151	1,985	5,559	4,719	13,638	1,849	1,803	--	--
Iron	2,664	--	144	2,769	1,707	1,247	1,510	207	703	10,950	3,573	12,500	2,109	1,273	--	--
Keweenaw	14	--	*	83	12	371	261	302	6	1,051	944	2,400	403	346	--	--
Marquette	3,752	--	373	2,947	6,696	1,605	1,750	1,619	4,189	22,931	6,971	16,527	3,852	1,670	--	--
Ontonagon	394	--	6	650	1,579	1,320	369	99	256	4,674	3,883	12,802	758	1,656	--	--
Total	9,873	--	774	11,343	13,836	7,275	6,054	3,405	9,982	62,542	28,319	85,937	12,529	10,561	--	--
NORTHERN LOWER PENINSULA																
Alcona	197	--	--	6	576	2,826	717	7	--	4,329	1,878	342	587	--	--	--
Alpena	670	--	--	21	243	637	333	2,068	--	3,971	1,958	140	505	--	--	--
Antrim	5	--	--	28	12	868	33	21	39	1,006	743	3,764	71	25	--	--
Arenac	--	--	--	--	42	33	16	11	--	102	817	32	123	--	--	--
Bay	--	--	--	--	--	--	--	--	--	--	67	--	--	--	--	--
Benzie	5	--	--	66	3	2,617	12	--	11	2,714	860	3,284	150	7	--	--
Charlevoix	26	--	--	6	27	1,085	137	203	28	1,511	627	3,818	506	177	--	--
Cheboygan	228	--	--	70	2,717	2,960	393	135	1	6,502	1,728	3,733	377	--	--	--
Clare	10	--	--	--	199	1,238	59	11	--	1,516	3,325	253	282	--	1	--
Crawford	52	--	--	10	6,469	4,212	620	16	3	11,383	622	495	87	--	--	--
Emmet	30	--	--	13	527	951	42	57	8	1,628	793	3,251	115	29	--	--
Gladwin	--	--	--	--	59	308	128	2	--	497	1,464	36	183	--	1	--
Grand Traverse	--	--	--	7	1,632	4,310	70	--	13	6,033	936	1,773	87	2	--	--
Iosco	53	--	--	--	374	3,425	397	43	10	4,301	1,178	139	291	1	--	--
Isabella	--	--	--	--	--	44	5	--	6	55	981	287	148	--	--	--
Kalkaska	30	--	--	67	3,576	9,016	213	1	11	12,914	1,308	2,490	146	9	--	--
Lake	--	--	--	32	1,734	6,126	153	--	25	8,070	1,374	285	107	1	--	--
Leelanau	3	--	--	17	336	557	52	20	7	992	210	2,453	52	4	--	--
Manistee	--	--	--	5	272	2,932	97	--	10	3,317	2,577	3,413	206	1	--	--
Mason	--	--	--	--	215	1,382	52	--	4	1,653	1,472	446	117	2	--	--
Mecosta	--	--	--	--	6	1,526	106	--	12	1,650	1,270	978	168	15	3	--
Midland	--	--	--	--	5	165	59	--	--	229	1,782	38	248	4	1	--
Missaukee	20	--	10	160	687	2,409	180	50	6	3,522	1,596	914	273	--	--	--
Montmorency	145	--	--	10	1,554	3,431	473	30	--	5,642	2,364	1,459	480	1	--	--
Newaygo	--	--	--	--	--	6,089	240	--	22	6,350	3,026	1,031	50	3	10	--
Oceana	--	--	--	--	--	1,044	138	--	49	1,232	1,451	865	70	3	33	--
Ogemaw	32	--	--	*	1,582	1,334	314	41	--	3,304	1,656	621	459	3	--	--
Osceola	5	--	--	25	70	858	33	--	4	995	1,570	1,424	189	--	--	--
Oscoda	112	--	--	--	4,016	5,353	1,157	6	22	10,665	1,184	659	371	10	--	--
Otsego	104	--	--	44	1,280	3,398	329	15	11	5,182	1,034	4,339	169	17	--	--
Presque Isle	530	--	2	95	1,140	1,422	132	520	--	3,842	2,071	1,154	1,212	--	--	--
Roscommon	28	--	--	--	4,683	2,212	349	46	1	7,319	2,095	191	287	4	--	--
Wexford	4	--	--	97	776	7,246	26	--	8	8,158	1,263	3,040	100	4	--	--
Total	2,289	--	12	780	34,811	82,016	7,065	3,302	310	130,585	47,279	47,146	8,214	323	50	--

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
SOUTHERN LOWER PENINSULA																
Allegan	--	--	--	--	--	5,338	10	--	--	5,348	664	122	--	--	64	14
Barry	--	--	--	--	--	125	4	--	--	129	715	2,169	--	--	133	50
Berrien	--	--	--	--	--	*	--	--	--	*	116	885	5	--	22	7
Branch	--	--	--	--	--	--	--	--	--	--	664	81	--	--	14	10
Calhoun	--	--	--	--	--	*	--	--	--	*	716	138	--	--	247	37
Cass	--	--	--	--	--	--	--	--	--	--	331	116	--	--	91	15
Clinton	--	--	--	--	--	--	--	--	--	--	1,405	14	--	--	157	14
Eaton	--	--	--	--	--	3	--	--	--	3	602	1,228	39	--	230	24
Genesee	--	--	--	--	--	--	--	--	--	--	71	302	--	--	4	5
Gratiot	--	--	--	--	1	--	3	--	--	5	504	55	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	68	715	--	--	13	4
Huron	--	--	--	--	--	--	--	--	--	--	103	5	42	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	512	337	--	--	70	15
Ionia	--	--	--	--	--	94	--	--	--	94	195	289	--	--	74	1
Jackson	--	206	--	--	--	1	1	--	2	209	175	10	--	--	257	72
Kalamazoo	--	--	--	--	--	50	*	--	--	51	328	73	--	--	49	11
Kent	--	--	--	--	--	254	10	--	--	264	1,393	2,233	*	1	39	11
Lapeer	--	--	--	--	--	78	3	--	--	81	584	645	10	28	6	16
Lenawee	--	--	--	--	--	--	--	--	--	--	35	798	--	--	127	37
Livingston	--	--	--	--	--	21	--	--	--	21	128	8	--	--	14	29
Macomb	--	--	--	--	--	--	--	--	--	--	55	98	--	--	--	30
Monroe	--	--	--	--	--	--	--	--	--	--	36	23	--	--	83	28
Montcalm	--	--	--	--	--	796	93	--	4	893	1,505	181	90	4	13	5
Muskegon	--	--	--	--	--	295	87	--	8	390	1,141	96	26	4	2	1
Oakland	--	--	--	--	--	2	0	--	--	2	97	152	--	--	13	30
Ottawa	--	--	--	--	--	471	7	--	5	483	395	444	--	2	8	2
Saginaw	--	--	--	--	--	2	9	--	--	11	445	142	12	--	63	9
Sanilac	--	--	--	--	--	--	1	--	--	1	67	--	18	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	260	244	--	--	30	16
St. Clair	--	--	--	--	--	1	2	--	--	3	317	420	--	--	5	10
St. Joseph	--	--	--	--	--	--	--	--	--	--	224	101	--	--	251	44
Tuscola	--	--	--	--	--	--	--	--	--	--	194	294	58	--	--	2
Van Buren	--	--	--	--	--	*	--	--	--	*	398	781	--	--	106	23
Washtenaw	--	--	--	--	--	76	--	--	--	76	94	10	--	--	187	43
Wayne	--	--	--	--	--	--	--	--	--	--	44	5	--	--	3	5
Total	--	206	--	--	1	7,607	230	--	19	8,063	14,584	13,213	300	39	2,378	623
State total	24,099	206	1,755	19,054	62,059	107,115	16,968	19,610	16,222	267,087	108,078	182,714	31,861	16,569	2,491	623

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Sycamore	Cottonwood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
EASTERN UPPER PENINSULA																	
Alger	3,231	349	--	--	--	--	364	3,356	436	212	1	--	1,214	*	65	29,067	36,286
Chippewa	413	86	--	--	--	--	745	3,895	31	162	*	--	614	--	11	11,866	23,216
Delta	649	270	--	--	--	--	485	8,201	163	359	3	--	341	7	34	21,383	37,466
Luce	1,703	96	--	--	--	--	48	1,433	151	364	--	--	360	--	39	15,461	21,408
Mackinac	365	249	--	--	--	--	708	4,179	129	15	--	--	1,536	--	7	13,944	18,615
Menominee	242	370	--	--	--	--	334	12,925	40	848	2	--	818	162	35	24,132	34,622
Schoolcraft	720	161	--	--	--	--	406	2,201	82	40	*	--	529	*	34	12,021	22,157
Total	7,323	1,581	--	--	--	--	3,090	36,190	1,032	2,000	6	--	5,413	169	225	127,872	193,770
WESTERN UPPER PENINSULA																	
Baraga	79	436	--	--	--	--	307	4,698	293	339	5	--	687	1	30	22,682	28,415
Dickinson	40	201	--	--	--	--	249	9,908	10	302	12	--	626	27	18	17,098	23,786
Gogebic	20	1,294	--	--	--	--	119	10,551	378	918	16	--	2,699	12	75	38,240	43,196
Houghton	87	535	--	--	--	--	318	6,269	113	1,026	29	--	1,124	4	55	31,569	37,128
Iron	110	518	--	--	--	--	652	12,059	393	868	13	--	2,094	19	65	36,246	47,196
Keweenaw	--	121	--	--	--	--	9	996	1	852	13	--	122	--	11	6,218	7,269
Marquette	1,398	398	--	--	--	--	951	13,258	324	1,574	21	--	1,026	25	84	48,079	71,010
Ontonagon	5	1,389	--	--	--	--	520	14,451	123	714	14	--	3,210	8	31	39,564	44,238
Total	1,739	4,891	--	--	--	--	3,126	72,189	1,636	6,593	123	--	11,588	96	368	239,695	302,237
NORTHERN LOWER PENINSULA																	
Alcona	77	366	--	--	--	--	203	8,715	37	6,326	318	--	226	1	*	19,076	23,405
Alpena	15	373	--	--	--	--	36	5,718	1	1,343	20	--	199	1	--	10,308	14,280
Antrim	240	552	1	--	--	--	1	1,924	67	74	*	--	2,272	25	--	9,758	10,765
Arenac	3	280	--	--	--	19	11	2,538	3	580	22	--	14	--	--	4,442	4,543
Bay	1	52	--	--	--	9	--	69	1	--	8	--	4	--	--	212	212
Benzie	239	373	--	--	--	--	--	1,115	157	78	6	--	693	3	47	7,011	9,726
Charlevoix	537	888	--	--	--	169	--	2,717	48	448	78	--	1,711	18	-	11,742	13,252
Cheboygan	483	1,170	--	--	--	197	31	8,512	26	1,294	154	--	1,777	1	--	19,481	25,984
Clare	64	165	--	--	--	--	3	10,554	60	3,535	451	--	21	6	4	18,723	20,239
Crawford	60	31	--	--	--	--	1	2,827	23	3,664	223	--	245	--	2	8,280	19,664
Emmet	567	823	--	--	--	113	3	2,639	79	418	78	--	1,078	4	*	9,990	11,618
Gladwin	1	261	--	--	--	12	56	5,954	7	1,717	149	--	30	7	--	9,880	10,377
Grand Traverse	89	135	--	--	--	--	3	1,119	48	844	235	--	319	--	10	5,602	11,635
Iosco	5	312	--	--	--	15	19	2,613	14	1,119	113	--	24	--	-	5,843	10,144
Isabella	13	281	1	--	--	36	--	2,867	13	1,519	226	3	87	15	--	6,477	6,532
Kalkaska	129	131	--	--	--	--	--	2,119	73	595	27	--	504	--	--	7,533	20,446
Lake	64	253	--	--	--	--	*	3,480	109	5,980	1,594	1	90	1	8	13,348	21,418
Leelanau	132	845	--	--	--	--	--	263	11	188	--	--	427	--	2	4,587	5,580
Manistee	449	304	--	--	--	--	--	3,100	321	3,195	534	--	180	--	45	14,326	17,642
Mason	83	172	--	--	--	--	*	2,821	107	2,595	691	8	55	--	4	8,572	10,225
Mecosta	99	692	1	--	--	43	--	4,753	126	977	236	10	218	12	5	9,608	11,258
Midland	52	300	--	--	--	313	43	3,844	6	1,039	600	--	74	17	--	8,362	8,591
Missaukee	110	276	--	--	--	--	1	4,066	45	842	139	--	250	--	15	8,527	12,049
Montmorency	50	361	--	--	--	--	172	7,647	9	5,554	67	--	883	1	-	19,047	24,689
Newaygo	234	472	9	--	--	11	*	2,842	229	6,381	1,769	48	260	14	3	16,390	22,741
Oceana	243	373	--	--	--	41	--	2,095	173	2,698	596	37	116	14	1	8,811	10,042
Ogemaw	132	204	--	--	--	--	28	7,035	7	3,812	102	--	523	--	1	14,582	17,886
Osceola	164	509	--	--	--	3	--	4,518	101	2,016	68	3	412	--	*	10,976	11,971
Oscoda	38	156	--	--	--	--	25	4,642	52	4,572	241	-	165	42	-	12,156	22,822
Otsego	283	389	--	--	--	99	4	5,155	26	872	71	--	2,345	11	-	14,814	19,996
Presque Isle	241	932	--	--	--	127	297	7,914	1	2,143	104	--	478	-	-	16,674	20,516
Roscommon	16	226	--	--	--	--	3	6,386	13	5,210	474	--	38	--	-	14,940	22,259
Wexford	315	337	--	--	--	--	7	1,836	233	1,570	61	--	391	1	31	9,188	17,346
Total	5,228	12,995	13	--	--	1,206	947	134,396	2,226	73,198	9,455	110	16,107	195	178	359,266	489,851

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
SOUTHERN LOWER PENINSULA																	
Allegan	144	543	7	1,163	--	1	--	261	274	2,358	1,406	--	52	--	18	7,091	12,440
Barry	151	297	14	2	--	1	--	39	579	3,061	463	--	214	7	26	7,922	8,051
Berrien	82	105	3	453	821	14	--	10	420	241	156	--	31	69	23	3,464	3,464
Branch	4	425	21	6	3	8	--	5	54	113	139	--	43	11	--	1,601	1,601
Calhoun	60	921	1	12	2	4	--	11	646	829	412	--	425	30	16	4,507	4,508
Cass	37	292	196	29	--	--	--	12	470	619	117	--	41	92	22	2,481	2,481
Clinton	27	278	72	--	--	12	--	3	449	377	176	1	126	4	--	3,118	3,118
Eaton	232	1,287	88	--	--	91	--	34	82	491	266	--	277	44	--	5,016	5,019
Genesee	14	151	20	--	--	50	--	5	18	260	119	--	74	3	--	1,098	1,098
Gratiot	--	252	--	--	--	165	--	47	3	981	299	1	109	--	--	2,417	2,421
Hillsdale	8	157	63	--	1	1	--	--	73	171	33	--	25	--	--	1,332	1,332
Huron	1	259	--	--	--	633	--	264	12	32	--	--	21	--	--	1,372	1,372
Ingham	46	436	1	--	2	66	--	9	82	200	99	--	128	16	--	2,020	2,020
Ionia	233	216	18	--	--	14	--	102	186	604	57	4	200	4	--	2,198	2,292
Jackson	25	263	143	--	2	1	--	7	362	1,778	725	--	93	4	18	3,935	4,145
Kalamazoo	13	188	8	69	--	4	--	33	201	492	147	--	30	--	7	1,652	1,702
Kent	42	431	53	14	--	--	--	606	230	2,876	899	20	162	2	9	9,022	9,285
Lapeer	60	237	--	--	--	160	--	329	24	1,027	372	--	27	1	--	3,527	3,607
Lenawee	89	80	68	--	2	--	--	1	26	114	64	--	196	--	--	1,636	1,636
Livingston	20	179	--	--	3	19	--	1	177	1,251	545	--	4	--	--	2,379	2,399
Macomb	10	75	--	--	--	42	--	43	8	192	300	--	8	--	--	861	861
Monroe	3	81	90	--	2	11	--	--	20	164	127	--	14	--	--	680	680
Montcalm	128	1,071	8	--	--	--	--	757	94	3,365	1,795	38	125	67	1	9,247	10,140
Muskegon	230	168	--	--	--	--	--	875	52	4,436	1,125	13	2	--	1	8,172	8,562
Oakland	18	233	4	--	2	26	--	1	103	572	203	--	32	--	--	1,486	1,488
Ottawa	196	184	--	9	--	3	--	75	24	1,093	272	--	19	2	--	2,728	3,211
Saginaw	--	498	--	--	--	97	--	27	5	424	629	--	7	--	--	2,356	2,367
Sanilac	4	324	--	--	--	34	--	94	22	107	1	--	30	--	--	700	701
Shiawassee	31	516	10	--	--	75	--	31	96	461	171	--	122	--	--	2,062	2,062
St. Clair	72	485	--	--	--	406	--	1	75	1,477	630	--	65	--	--	3,964	3,967
St. Joseph	12	363	509	27	3	2	--	51	225	1,245	117	--	51	14	8	3,247	3,247
Tuscola	34	404	2	--	--	310	--	604	57	136	61	--	184	28	--	2,368	2,368
Van Buren	158	439	6	11	--	--	--	23	535	1,945	226	--	66	28	20	4,768	4,768
Washtenaw	19	138	298	--	4	15	--	--	106	586	1,011	--	11	--	1	2,522	2,598
Wayne	8	54	--	--	1	23	--	--	--	235	127	--	72	14	--	592	592
Total	2,212	12,026	1,703	1,797	849	2,290	--	4,361	5,789	34,314	13,288	77	3,088	440	170	113,540	121,603
State total	16,502	31,493	1,716	1,797	849	3,496	7,164	247,136	10,683	116,105	22,872	187	36,196	901	941	840,373	1,107,460

1/ International 1/4-inch rule.

** = Less than 500 board feet.*

Rows and columns may not sum due to rounding.

Table 22.--Harvest residues generated by industrial roundwood harvesting by Forest Survey Unit, county, and species group, Michigan, 1994

(In thousand cubic feet)

Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
EASTERN UPPER PENINSULA																
Alger	155	--	14	44	230	160	47	25	175	850	519	1,530	167	149	-	-
Chippewa	232	--	19	106	226	200	47	50	123	1,003	168	400	71	24	-	-
Delta	204	--	17	118	311	209	61	563	126	1,610	338	472	211	488	-	-
Luce	132	--	11	82	185	79	45	23	150	708	242	846	81	42	-	-
Mackinac	117	--	9	98	90	79	23	28	59	503	157	471	184	41	-	-
Menominee	181	--	9	167	71	64	56	415	40	1,003	199	582	299	35	-	-
Schoolcraft	250	--	24	88	409	128	56	79	215	1,248	259	718	143	54	-	-
Total	1,270	--	104	702	1,522	919	336	1,183	888	6,925	1,881	5,018	1,157	833	--	-
WESTERN UPPER PENINSULA																
Baraga	48	--	5	156	91	29	21	21	134	504	295	962	155	116	-	-
Dickinson	113	--	14	118	258	88	43	77	60	771	120	413	176	27	-	-
Gogebic	83	--	1	141	19	68	54	*	42	409	366	1,502	65	132	-	-
Houghton	84	--	4	64	122	56	32	14	139	515	431	1,469	225	138	-	-
Iron	288	--	15	290	230	138	106	21	100	1,187	389	1,437	221	112	-	-
Keweenaw	1	--	*	8	1	23	15	26	1	75	82	268	34	25	-	-
Marquette	406	--	40	312	864	190	147	158	631	2,747	760	2,273	501	192	-	-
Ontonagon	43	--	1	66	209	103	26	9	23	479	342	1,342	67	136	-	-
Total	1,065	--	81	1,154	1,795	694	443	326	1,130	6,686	2,784	9,664	1,444	878	--	-
NORTHERN LOWER PENINSULA																
Alcona	1	--	--	1	39	159	40	1	--	241	115	29	50	-	-	-
Alpena	3	--	--	1	9	38	19	187	--	257	108	12	25	-	-	-
Antrim	--	--	--	--	1	53	2	2	2	60	36	255	4	1	-	-
Arenac	--	--	--	--	5	2	1	1	--	9	58	4	17	-	-	-
Bay	--	--	--	--	--	--	--	--	--	--	3	--	--	-	-	-
Benzie	--	--	--	--	--	129	1	--	1	130	54	222	17	*	-	-
Charlevoix	--	--	--	--	4	72	8	17	2	102	35	234	27	9	-	-
Cheboygan	3	--	--	3	40	176	21	10	*	253	100	218	25	-	-	-
Clare	--	--	--	--	17	62	3	1	--	83	231	35	37	-	*	-
Crawford	--	--	--	--	273	299	33	1	*	606	38	32	3	-	-	-
Emmet	2	--	--	1	4	63	2	5	*	77	45	222	5	1	-	-
Gladwin	--	--	--	--	8	18	7	*	--	33	96	8	20	-	*	-
Grand Traverse	--	--	--	--	41	243	3	--	1	288	64	146	7	*	-	-
Iosco	--	--	--	--	22	196	22	4	1	246	63	27	28	*	-	-
Isabella	--	--	--	--	--	4	*	--	*	4	60	15	20	-	-	-
Kalkaska	--	--	--	--	20	485	10	*	1	515	92	195	7	*	-	-
Lake	--	--	--	--	90	371	9	--	1	471	62	16	14	*	-	-
Leelanau	--	--	--	--	--	25	3	2	*	30	12	156	2	*	-	-
Manistee	--	--	--	--	4	162	5	--	1	172	147	214	21	*	-	-
Mason	--	--	--	--	1	70	3	--	*	74	80	24	11	*	-	-
Mecosta	--	--	--	--	1	85	6	--	1	93	77	64	20	1	*	-
Midland	--	--	--	--	1	9	3	--	--	13	118	6	32	*	*	-
Missaukee	--	--	1	--	47	131	10	4	*	193	111	82	31	-	-	-
Montmorency	1	--	--	1	92	199	26	3	--	322	178	140	54	*	-	-
Newaygo	--	--	--	--	--	342	13	--	1	356	178	80	8	*	1	-
Oceana	--	-	--	--	--	58	8	--	3	68	88	74	11	*	4	-
Ogemaw	--	-	-	--	115	74	17	4	--	211	87	41	27	*	-	-
Osceola	--	--	--	--	4	42	2	--	*	48	101	89	20	-	-	-
Oscoda	*	--	--	--	249	303	65	*	1	619	53	51	19	*	-	-
Otsego	6	-	--	4	41	201	18	1	1	272	75	299	9	1	-	-
Presque Isle	10	-	*	10	39	81	7	46	--	192	202	78	160	-	-	-
Roscommon	--	-	--	--	191	125	18	4	*	338	134	24	23	*	-	-
Wexford	-	--	--	--	32	388	1	--	*	421	92	261	13	*	-	-
Total	27	--	1	21	1,388	4,666	388	294	17	6,802	2,993	3,352	767	16	5	-

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
SOUTHERN LOWER PENINSULA																
Allegan	--	--	--	--	--	299	1	--	--	300	31	6	--	--	3	1
Barry	--	--	--	--	--	7	*	--	--	7	36	125	--	--	7	3
Berrien	--	--	--	--	--	*	--	--	--	*	6	54	*	--	1	*
Branch	--	--	--	--	--	--	--	--	--	--	34	4	--	--	1	1
Calhoun	--	--	--	--	--	*	--	--	--	*	37	7	--	--	12	2
Cass	--	--	--	--	--	--	--	--	--	--	17	6	--	--	5	1
Clinton	--	--	--	--	--	--	--	--	--	--	73	1	--	--	9	1
Eaton	--	--	--	--	--	*	--	--	--	*	37	77	3	--	13	1
Genesee	--	--	--	--	--	--	--	--	--	--	4	19	--	--	*	*
Gratiot	--	--	--	--	*	--	*	--	--	*	26	3	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	4	41	--	--	1	*
Huron	--	--	--	--	--	--	--	--	--	--	5	*	2	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	27	18	--	--	4	1
Ionia	--	--	--	--	--	5	--	--	--	5	10	15	--	--	4	*
Jackson	--	19	--	--	--	*	*	--	*	20	9	1	--	--	13	4
Kalamazoo	--	--	--	--	--	3	*	--	--	3	17	4	--	--	2	1
Kent	--	--	--	--	--	14	1	--	--	15	79	145	--	*	2	1
Lapeer	--	--	--	--	--	4	*	--	--	5	30	38	1	1	*	1
Lenawee	--	--	--	--	--	--	--	--	--	--	2	46	--	--	6	2
Livingston	--	--	--	--	--	1	--	--	--	1	7	*	--	--	1	1
Macomb	--	--	--	--	--	--	--	--	--	--	3	5	--	--	--	2
Monroe	--	--	--	--	--	--	--	--	--	--	2	1	--	--	4	1
Montcalm	--	--	--	--	--	45	5	--	*	50	93	10	11	*	1	*
Muskegon	--	--	--	--	--	17	5	--	*	22	65	18	4	*	*	*
Oakland	--	--	--	--	--	*	*	--	--	*	5	8	--	--	1	2
Ottawa	--	--	--	--	--	26	*	--	*	27	19	29	--	*	*	*
Saginaw	--	--	--	--	--	*	1	--	--	1	23	7	1	--	3	*
Sanilac	--	--	--	--	--	--	*	--	--	*	3	--	1	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	13	13	--	--	2	1
St. Clair	--	--	--	--	--	*	*	--	--	*	16	22	--	--	*	1
St. Joseph	--	--	--	--	--	--	--	--	--	--	9	5	--	--	13	2
Tuscola	--	--	--	--	--	--	--	--	--	--	10	19	3	--	--	*
Van Buren	--	--	--	--	--	*	--	--	--	*	20	44	--	--	5	1
Washtenaw	--	--	--	--	--	4	--	--	--	4	5	1	--	--	9	2
Wayne	--	--	--	--	--	--	--	--	--	--	2	*	--	--	*	*
Total	--	19	--	--	--	427	13	--	1	460	782	793	26	2	122	32
State total	2,362	19	186	1,877	4,705	6,706	1,180	1,802	2,037	20,874	8,441	18,828	3,394	1,730	127	32

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Sycamore	Cottonwood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hard woods	Total hardwoods	All species
EASTERN UPPER PENINSULA																	
Alger	255	48	--	--	--	--	59	418	32	29	*	--	86	*	36	3,327	4,177
Chippewa	46	12	--	--	--	--	120	435	4	14	*	--	35	--	7	1,336	2,339
Delta	102	35	--	--	--	--	78	896	17	30	*	--	41	1	29	2,737	4,347
Luce	119	19	--	--	--	--	8	180	10	35	--	--	28	--	6	1,615	2,323
Mackinac	46	25	--	--	--	--	114	438	11	4	--	--	85	--	14	1,590	2,094
Menominee	48	43	--	--	--	--	50	1,000	6	54	1	--	58	9	14	2,397	3,400
Schoolcraft	92	26	--	--	--	--	66	273	10	11	*	--	38	*	22	1,713	2,961
Total	708	207	--	--	--	--	494	3,639	90	177	1	--	372	9	127	14,715	21,640
WESTERN UPPER PENINSULA																	
Baraga	15	52	--	--	--	--	48	530	17	30	*	--	61	*	5	2,285	2,789
Dickinson	7	29	--	--	--	--	40	1,102	1	25	1	--	53	2	5	2,002	2,773
Gogebic	1	130	--	--	--	--	19	802	20	78	3	--	176	1	12	3,309	3,718
Houghton	19	77	--	--	--	--	49	559	8	72	2	--	91	*	16	3,155	3,670
Iron	20	86	--	--	--	--	103	1,250	23	74	2	--	165	1	17	3,901	5,088
Keweenaw	--	15	--	--	--	--	--	51	*	46	1	--	10	--	2	534	609
Marquette	220	69	--	--	--	--	153	1,515	34	115	2	--	102	2	60	5,998	8,745
Ontonagon	*	172	--	--	--	--	68	1,016	7	59	4	--	230	1	5	3,446	3,926
Total	283	630	--	--	--	--	480	6,824	110	500	15	--	888	7	122	24,630	31,317
NORTHERN LOWER PENINSULA																	
Alcona	6	33	--	--	--	--	33	750	2	333	23	--	22	*	*	1,395	1,636
Alpena	3	34	--	--	--	--	6	351	*	40	1	--	13	*	--	593	850
Antrim	13	31	*	--	--	--	*	117	4	5	*	--	119	1	--	587	648
Arenac	*	17	--	--	--	1	2	240	*	27	1	--	1	--	--	369	378
Bay	*	3	--	--	--	*	--	7	*	--	*	--	*	--	--	14	14
Benzie	24	25	--	--	--	--	--	78	8	7	1	--	43	*	5	486	616
Charlevoix	27	45	--	--	--	9	--	186	3	18	3	--	89	1	-	683	785
Cheboygan	24	62	--	--	--	10	4	496	1	49	6	--	99	*	-	1,095	1,348
Clare	4	10	--	--	--	--	*	984	3	140	21	--	1	*	1	1,468	1,551
Crawford	3	2	--	--	--	--	*	163	1	139	9	--	12	--	*	403	1,009
Emmet	29	43	--	--	--	6	1	226	4	17	3	--	56	*	*	658	735
Gladwin	*	14	--	--	--	1	4	445	*	72	8	--	2	*	--	670	703
Grand Traverse	14	11	--	--	--	--	*	76	3	37	11	--	25	--	2	395	683
Iosco	1	19	--	--	--	1	3	193	1	66	7	--	2	--	--	409	656
Isabella	1	14	*	--	--	4	--	250	1	99	16	*	10	2	--	494	498
Kalkaska	10	14	--	--	--	--	--	143	4	35	3	--	26	--	--	530	1,045
Lake	4	13	--	--	--	--	--	313	6	322	89	*	5	*	1	846	1,317
Leelanau	16	45	--	--	--	--	--	21	1	12	--	--	27	--	*	291	321
Manistee	32	25	--	--	--	--	--	259	17	172	28	--	12	--	4	930	1,102
Mason	5	9	--	--	--	--	--	202	6	125	30	*	3	-	--	495	569
Mecosta	14	36	*	--	--	7	--	471	7	53	11	1	14	1	*	775	868
Midland	4	19	--	--	--	28	2	293	*	49	27	--	5	1	--	585	598
Missaukee	12	18	--	--	--	--	*	430	2	53	11	--	28	-	1	780	974
Montmorency	5	37	--	--	--	--	28	636	*	201	7	--	81	*	--	1,368	1,691
Newaygo	25	29	*	--	--	2	--	292	12	278	74	2	16	2	*	1,000	1,356
Oceana	26	32	--	--	--	5	--	229	9	152	35	2	12	2	*	682	751
Ogemaw	7	14	--	--	--	--	4	518	*	170	6	--	28	-	*	903	1,114
Osceola	25	35	--	--	--	*	--	323	5	148	19	*	26	--	--	791	839
Oscoda	2	10	--	--	--	--	4	296	3	207	13	--	10	2	--	670	1,289
Otsego	13	19	-	--	--	5	1	328	1	34	3	-	126	1	-	915	1,187
Presque Isle	17	91	--	--	--	7	48	753	*	123	11	--	44	-	--	1,534	1,726
Roscommon	1	13	--	--	--	--	*	485	1	199	20	--	2	--	--	902	1,240
Wexford	36	34	--	--	--	--	1	164	12	70	6	-	31	*	5	726	1,147
Total	404	858	1	--	--	86	140	10,718	117	3,452	505	6	988	14	19	24,442	31,243

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Beech	Ash	Black walnut	Yellow poplar	Sycamore	Cottonwood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
SOUTHERN LOWER PENINSULA																	
Allegan	8	27	*	61	--	*	--	5	14	94	51	--	3	--	1	306	605
Barry	8	15	1	*	--	*	--	2	31	126	20	--	11	*	1	386	393
Berrien	5	5	*	24	43	1	--	1	24	10	6	--	2	4	1	186	186
Branch	*	21	1	*	*	*	--	*	3	5	6	--	2	1	--	80	80
Calhoun	4	46	*	1	*	*	--	1	34	32	14	--	22	2	1	215	215
Cass	2	15	10	2	--	--	--	1	25	25	4	--	2	5	1	120	120
Clinton	4	16	4	--	--	1	--	*	23	17	9	*	7	*	--	166	166
Eaton	25	71	5	--	--	5	--	2	4	29	19	--	17	3	--	311	311
Genesee	1	8	1	--	--	3	--	*	1	11	5	--	4	*	--	56	56
Gratiot	--	13	--	--	--	9	--	4	*	40	12	*	6	--	--	112	112
Hillsdale	1	8	3	--	*	*	--	--	4	7	1	--	1	--	--	71	71
Huron	*	13	--	--	--	33	--	15	1	1	--	--	1	--	--	72	72
Ingham	2	22	*	--	*	3	--	*	4	8	4	--	7	1	--	101	101
Ionia	12	11	1	--	--	1	--	6	10	24	2	*	10	*	--	106	112
Jackson	2	13	7	--	*	*	--	*	19	74	31	--	5	*	1	179	199
Kalamazoo	1	9	*	4	--	*	--	2	10	17	3	--	2	--	*	73	76
Kent	2	22	3	1	--	--	--	69	13	130	41	1	8	*	1	517	532
Lapeer	3	12	--	--	--	8	--	18	1	41	16	--	1	*	--	173	177
Lenawee	5	4	4	--	*	--	--	*	1	5	3	--	10	--	--	88	88
Livingston	1	9	--	--	*	1	--	*	9	52	24	--	*	--	--	107	108
Macomb	1	4	--	--	--	2	--	2	*	8	12	--	*	--	--	39	39
Monroe	*	4	5	--	*	1	--	--	1	7	5	--	1	--	--	33	33
Montcalm	9	63	*	--	--	--	--	84	5	149	82	2	12	4	*	526	576
Muskegon	17	14	--	--	--	--	--	102	3	195	50	1	*	--	*	468	490
Oakland	1	12	*	--	*	1	--	*	5	25	10	--	2	--	--	71	72
Ottawa	10	10	--	*	--	*	--	7	1	47	9	--	1	*	--	135	162
Saginaw	--	25	--	--	--	5	--	1	*	17	26	--	*	--	--	110	111
Sanilac	*	16	--	--	--	2	--	5	1	4	*	--	2	--	--	35	35
Shiawassee	2	26	*	--	--	4	--	4	5	20	7	--	6	--	--	103	103
St. Clair	4	25	--	--	--	21	--	*	4	60	26	--	3	--	--	181	181
St. Joseph	1	18	28	1	*	*	--	3	12	48	3	--	3	1	*	147	147
Tuscola	2	20	*	--	--	16	--	33	3	6	2	--	10	1	--	126	126
Van Buren	10	22	*	1	--	--	--	1	29	84	14	--	3	1	1	237	237
Washtenaw	1	7	16	--	*	1	--	--	6	24	44	--	1	--	*	117	121
Wayne	*	3	--	--	*	1	--	--	--	10	5	--	4	1	--	27	27
Total	142	630	91	94	44	119	--	369	307	1,451	568	4	169	24	9	5,778	6,239
State total	1,537	2,326	92	94	44	205	1,115	21,549	624	5,580	1,089	10	2,417	54	277	69,565	90,439

** = Less than 500 cubic feet.*

Table 23.--Residues produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Michigan, 1994

(In thousand tons, green weight)

Survey Unit and type of use	Wood residue						Bark	
	Total		Coarse1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
EASTERN UPPER PENINSULA								
Fiber products	22.72	26.08	22.41	26.08	0.31	--	--	--
Charcoal	--	27.81	--	27.81	--	--	--	--
Industrial fuel-mill	33.84	66.04	0.64	12.50	33.21	53.54	76.94	133.82
Industrial fuel-sold	4.34	28.90	2.16	10.08	2.18	18.83	1.79	13.23
Domestic fuel	0.73	6.05	0.73	6.05	--	--	0.15	0.57
Miscellaneous 3/	25.03	15.24	6.46	0.74	18.57	14.50	5.13	15.92
Not used	0.57	0.01	0.24	--	0.33	0.01	0.07	--
Total	87.24	170.13	32.64	83.26	54.60	86.88	84.08	163.55
WESTERN UPPER PENINSULA								
Fiber products	2.26	106.84	2.26	106.84	--	--	--	--
Industrial fuel-mill	2.25	134.26	0.60	6.18	1.66	128.08	0.54	214.21
Industrial fuel-sold	4.70	86.62	1.60	15.01	3.10	71.61	1.52	120.93
Domestic fuel	1.93	4.34	1.93	4.33	0.01	0.01	0.64	1.82
Miscellaneous 3/	0.38	8.56	0.08	--	0.30	8.56	0.07	1.96
Not used	0.60	0.11	0.14	--	0.46	0.11	0.05	0.71
Total	12.12	340.73	6.60	132.36	5.52	208.37	2.83	339.62
NORTHERN LOWER PENINSULA								
Fiber products	108.24	187.07	86.17	183.80	22.07	3.27	--	0.80
Charcoal	0.15	0.05	0.10	--	0.05	0.05	0.04	--
Industrial fuel-mill	5.92	21.70	0.92	4.76	5.00	16.94	4.87	80.76
Industrial fuel-sold	97.58	231.88	40.62	99.78	56.96	132.10	19.17	115.17
Domestic fuel	3.96	33.98	3.87	33.89	0.09	0.09	1.05	16.56
Miscellaneous 3/	17.45	109.27	5.65	6.97	11.80	102.30	42.86	88.23
Not used	2.02	7.65	1.33	5.63	0.69	2.02	0.87	2.51
Total	235.32	591.59	138.65	334.82	96.67	256.77	68.87	304.03
SOUTHERN LOWER PENINSULA								
Fiber products	0.39	86.80	0.39	86.80	--	--	--	--
Industrial fuel-mill	--	34.16	--	5.63	--	28.53	--	53.01
Industrial fuel-sold	--	7.43	--	4.96	--	2.48	--	--
Domestic fuel	0.29	22.31	0.29	21.43	0.00	0.87	0.09	5.68
Miscellaneous 3/	0.57	69.43	0.09	10.94	0.48	58.50	0.34	48.31
Not used	0.04	0.71	0.02	0.29	0.02	0.42	0.01	0.14
Total	1.28	220.84	0.78	130.05	0.51	90.79	0.44	107.13
ALL UNITS								
Fiber products	133.61	406.79	111.22	403.52	22.39	3.27	--	0.80
Charcoal	0.15	27.86	0.10	27.81	0.05	0.05	0.04	--
Industrial fuel-mill	42.01	256.17	2.16	29.08	39.86	227.09	82.35	481.80
Industrial fuel-sold	106.62	354.83	44.38	129.82	62.24	225.01	22.48	249.33
Domestic fuel	6.91	66.67	6.81	65.71	0.10	0.97	1.92	24.62
Miscellaneous 3/	43.43	202.50	12.28	18.64	31.15	183.86	48.41	154.41
Not used	3.23	8.47	1.73	5.92	1.50	2.55	1.00	3.36
Total	335.97	1,323.29	178.67	680.48	157.30	642.81	156.22	914.32

1/ Suitable for chipping such as slabs, edgings, veneer cores, etc.

2/ Not suitable for chipping such as sawdust, veneer clippings, etc.

3/ Livestock bedding, mulch, small dimension, and specialty items.

Rows and columns may not sum due to rounding.

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Industrial roundwood production rose from 346.8 million cubic feet in 1992 to 386.9 million cubic feet in 1994. Pulpwood accounted for 62 percent of total roundwood production in Michigan in 1994—3.0 million cords. Saw-log production rose from 632 million board feet in 1992 to 658 million board feet in 1994. Logging residue generated in 1994 was estimated to be 4.8 million cubic feet.

KEY WORDS: Pulpwood, saw logs, veneer logs, residue, growing stock.

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Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.